

Middle Mechanics, &c.
A M E R I C A N

RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

ASSISTANT EDITORS:

JAMES T. HODGE, *For Mining and Metallurgy.*

CHARLES T. JAMES, *For Manufactures and the Mechanic Arts.*

M. BUTT HEWSON, *For Civil Engineering.*

SATURDAY, FEBRUARY 2, 1850..

Second Quarto Series, Vol. VI., No. 5.—Whole No. 710, Vol. XXIII.

ESTABLISHED IN 1831.

NEW-YORK:

PUBLISHED WEEKLY, BY

JOHN H. SCHULTZ & CO.

Room 13, Third Floor,

No. 136 Nassau Street.

Walter Westman

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, February 2, 1850.

Additional Notes on Brooklyn Water Works.

Having written the remarks published in last week's number of the Journal on the water works of Brooklyn very hurriedly, I had been able to go into the question in only a very general way. I beg leave now to explain some of the leading points in the case more fully; and with this view will consider in the first instance, that the formation of Long Island is gravel to the level of the sea, and in the next, that an impervious bed intersects the island between the level of the surface and the level of the sea.

If the formation of Long Island be gravel to the level of the sea, the sea water, passing freely through a material so loose and porous, will always be found at that level; and therefore any wells or channels sunk in such stratum must necessarily communicate with the sea water. If those wells or channels be made water-tight to a level sufficiently high to prevent this communication, the case will stand in this

way: The water can never rise in the well above the level of the water-tight point, seeing that above this it must flow freely through the gravel sides to the sea water below. Besides, the wells, even though sunk to a great depth, cannot command a wide range of basin, inasmuch as the rain-fall being first received on an open formation, the absorption will naturally sink to the sea water underneath; and in consequence, no considerable amount of absorption can possibly rise in the wells, unless, perhaps, at periods of heavy rains.—While the water can descend vertically, it will not travel over an inclined plane.—Indeed, with water-tight sides to a certain height, it is quite plain that no water except that which falls on its own surface can enter the well until the whole formation of the island shall have become surcharged with water to the height of the water-tight sides. If, therefore, the formation be loose gravel to the level of the sea, the wells suggested cannot even when made staunch yield pure water; inasmuch as the only water that can enter must be the overflowing of a body of water in direct communication with the sea; and as this overflowing can take place only when the porous material of the island shall have been surcharged with absorption, the wells sunk in such a material can receive only a periodic supply, one that consequently must fall far short of the requirements of a city. These reasonings are a simple repetition of self-evident truths; but as many engineering errors may be traced to an oversight of the simplest facts, it is perhaps more prudent to detail those concerned in this case. I confess my inability to propose a good remedy for such a state of things; but as such a state seems very unlikely indeed, something practically useful may be done by considering the more probable conditions of the case.

Next, if an impervious plane intersect the island below the level of the surfaces, and above the level of the sea, there can be no doubt that the material above this plane being loose and open, a considerable proportion of the rain-shed must descend to this plane. This bed then is the surface by which we must be ruled in the case: the levels recommended to be taken across the island are useful so far only as they help in plotting from the borings the sections of this intermediate impervious bed. This under, or as it may be called secondary, surface will be found like the upper or primary surface, to consist of a series of valleys, or as they are termed by Engineers 'catchment basins;' these valleys or

basins receiving at their lowest level the proportion of rain-shed chargeable to the absorption of the soil, and converging as in the case of surface valleys on either one common point, or to several distinct points of lowest depression. If several of the valleys shown on the impervious layer combine as in the latter case in a common system by debouching as tributaries into one common valley, the point of lowest level in this common valley must evidently receive the water of the whole system.—In this case, if the area drained into this lowest level be of sufficient extent, a shaft or well tapping it must of course yield a sufficient supply;—and under such circumstances a shaft or well tapping this point is clearly the natural, and indeed the only effective means of supply. But if on the other hand these valleys discharge into the sea by distinct outlets, or if, as also is very likely, the section of the impervious bed should present two surfaces inclining from a ridge in or near the middle of the island to the sea on one side and to the sound on the other, a moment's reflection will show the imprudence of attempting to tap the absorption to any extent by a well or a series of wells. If each valley of the retentive surface discharge directly into the sea its own proportion of absorption over an incline dipping from the centre of the island towards either shore, the natural, and indeed the only means of supply lies in excavating through the impervious stratum contoured catchment-drains that shall intersect the line of lowest level within each valley, at a point on that line sufficiently elevated to admit of the proper gradient for the drain, the debouching point being maintained at a sufficient height above the sea. If the section of the retentive stratum should present an *unbroken* incline, dipping from the centre towards each coast, a simple catchment-drain cut along the sides of these two inclines and graduated in the same way as the more tortuous drains described, is also under such circumstances the natural and the only means of obtaining a full supply. The probabilities are strongly in favor of the supposition that one or other of the two last cases will be the result established by such a survey as was recommended in last week's Journal. To preserve the purity of the water, and also to save any interruption from slips or the like to the flow through the catchment-drains, it would be well to turn an arch over them: the retentive slopes and bottom will answer fully all the purposes of brickwork for the remainder of the

section. These channels should debouch into a reservoir, from which the water might be raised by steam to any level necessary for distribution.—They can never be overcharged, seeing that above the level of the retentive slopes, and below the springing of the arching, the loose gravel will act as a natural waste-gate; and on the other hand, if the supply from absorption alone should be found insufficient, a large amount of surface-water might be brought in by cutting a little higher up the slopes of the surface, open catchments thro' which surface-water might be made to communicate freely with the aqueduct.

No opinion is given here as to the superiority in the case of Brooklyn of either of these measures proposed; it even seems strange that the deliberative and far-seeing intellect which arranged so admirably a work of such magnificence as the Croton aqueduct, could have been in the case of the Brooklyn water works, somewhat hasty in his opinion.—The wells are the only means of supply, under one set of circumstances; the catchments are the only means of supply under a different set; and therefore it is quite impossible to pronounce intelligently on either one or the other as a means of supply, until a survey shall have established the circumstances of the particular case in question.

The liability to an improper location of either a well or a catchment-drain, apart from the necessity of proper sections of the substratum with the view of establishing the fitness of the one or the other means of supply, goes to show that such sections are equally necessary for the judicious location of the means that may be found adapted to any particular case. They are still further necessary for the purpose of estimating the probable amount of supply delivered at any one point; and consequently for ascertaining the extent of the works—in the one case the number of wells required to yield a given supply; in the other case the length of catchment-drains required to produce the same result.

The observations to be taken on the existing springs and water courses will be available in the first place as a collateral evidence of the accuracy of the results of the borings; and in the next place as a means, by comparison with the returns of the rain-gauge, of approximating to the amount of absorption. The smallest peculiarity connected with these may define a large and important series of facts; and these facts cannot fail to correct any errors that may be embodied in the view of the case furnished by the borings. Experience in works of this very peculiar class is absolutely necessary to ultimate success; experience only can catch at and follow out the minute of evidence necessary to place the measures proposed on a clear, well-established footing.

The necessity for the fullest inquiry into all the particulars detailed in last week's number, and such other particulars as a very careful examination of the country will suggest to a man of skill, is urged here on the faith of a very considerable practice in designing and executing works of this nature. Until all the information necessary to convey a clear view of the whole conditions of the case, shall have been collected, any man of practical experience in such questions will decline to give an opinion as to the means of supply.—The survey necessary will doubtless cost a good deal of money; but without such a preliminary outlay, the whole cost of a rash system will most probably—perhaps I might say most certainly—fail to yield each citizen even a pint of wholesome water in the 24 hours.

M.B.H.

Statistics of Lowell Manufactures.

COMPILED FROM AUTHENTIC SOURCES.—JAN. 1850.

Incorporated.

Merrimack Manufacturing company	1822
Hamilton Manufacturing company	1825
Appleton company	1828
Lowell Manufacturing company	1828
Middlesex company	1830
Suffolk manufacturing company	1830
Tremont Mills	1830
Lawrence manufacturing company	1830
Lowell Bleachery	1832
Boott cotton mills	1835
Massachusetts cotton mills	1839
Lowell machine shop	1845

Commenced Operations.

Merrimack manuf. co.	1823
Hamilton manuf. co.	1825
Appleton co.	1828
Lowell manuf. co.	1828
Middlesex co.	1830
Suffolk manufacturing co.	1832
Tremont mills	1832
Lawrence manuf. co.	1833-34
Lowell bleachery	1832
Boott cotton mills	1836
Massachusetts cotton mills	1840
Lowell machine shop	1845

Capital Stock.

Merrimack manuf. co.	\$2,500,000
Hamilton manuf. co.	1,200,000
Appleton co.	600,000
Lowell manuf. co.	1,500,000
Middlesex co.	1,000,000
Suffolk manuf. co.	600,000
Tremont mills	600,000
Lawrence manuf. co.	1,500,000
Lowell bleachery	210,000
Boott cotton mills	1,200,000
Massachusetts cotton mills	1,800,000
Lowell machine shop	600,000
	\$13,210,000

Number of Mills.

Merrimack manuf. co.	6 and Print works.
Hamilton	4
Appleton co.	2
Lowell manuf. co.	1 spinning, 1 carpet, 1 cotton.
Middlesex co.	4 and 3 dye houses.
Suffolk manuf. co.	3
Tremont mills	2
Lawrence manuf. co.	5
Lowell bleachery	Bleachery and dye-works.
Boott cotton mills	5
Massachusetts cotton mills	6
Lowell machine shop	2 shops, smithy & foundry.
Total, 50.	

Females Employed.

Merrimack manuf. co.	1,500
Hamilton manuf. co.	940
Appleton co.	400
Lowell manuf. co.	550
Middlesex co.	730
Suffolk manuf. co.	400
Tremont mills	400
Lawrence manuf. co.	1,200
Lowell bleachery	20
Boott cotton mills	870
Massachusetts	1,250
	8,260

Yards Made per Week.

Merrimack manuf. co.	310,000
Hamilton manuf. co.	200,000
Appleton co.	140,000
Lowell manuf. co.	12,000 carpet, 40 rugs, 95,000 cotton
Middlesex co.	16,587 cassimere, 2,890 broad-cloth
Suffolk manuf. co.	19,477
Tremont mills	120,000
Lawrence manuf. co.	140,000
Boott cotton mills	260,000
Massachusetts	270,000
	475,000
40 rugs, 2,110,000 cotton, 20,477 woolen, 12,000 carpets—total yds.	2,142,477

Looms.

Merrimack manuf. co.	2,012
Hamilton manuf. co.	1,124
Appleton co.	600
Lowell manuf. co.	230 cotton, 124 power carpet.
Middlesex co.	75 broadcloth, 328 cassimere.
Suffolk manuf. co.	590
Tremont mills	557
Lawrence manuf. co.	1,364
Boott cotton mills	1,432
Massachusetts	1,459
	9,885

Spindles.

Merrimack manuf. co.	68,768
Hamilton manuf. co.	38,416
Appleton co.	17,920
Lowell manuf. co.	4,200 wool, 7,142 cotton—11,342
Middlesex co.	16,340
Suffolk manuf. co.	14,448
Tremont mills	14,560
Lawrence manuf. co.	44,800
Boott cotton mills	47,632
Massachusetts	45,720
	319,946

Males Employed.

Merrimack manuf. co.	645
Hamilton manuf. co.	367
Appleton co.	120
Lowell manuf. co.	225
Middlesex co.	575
Suffolk manuf. co.	100
Tremont mills	100
Lawrence manuf. co.	200
Lowell bleachery	262
Boott cotton mills—(including mule tenders)	262
Massachusetts	250
Lowell machine shop	700
	3,744

Cotton Consumed per Week—lbs.

Merrimack manuf. co.	67,000
Hamilton manuf. co.	66,000
Appleton co.	50,000
Lowell manuf. co.	50,000
Suffolk manuf. co.	48,000
Tremont mills	42,000
Lawrence manuf. co.	95,000
Boott cotton mills	85,000
Massachusetts	150,000
Lowell machine shop, 4500 tons wrought and cast iron per annum.	653,000

Wool Consumed per Week—lbs.

Lowell manuf. co.	36,000
Middlesex co.	33,000
	69,000

Yards Dyed and Printed.

Merrimack manuf. co.	270,000
Hamilton manuf. co.	75,000 printed, 15,000 dyed.
Lowell bleachery	9,500,000 dyed.
Lowell machine shop, cotton and woolen machinery, locomotives and steam engines.	
Total—345,000 printed; 9,515,000 dyed.	

Kind of Goods Made.

Merrimack manuf. co.	—prints and sheetings, No 23 to 40.
Hamilton manuf. co.	—prints, flannels and sheetings, 14 to 40.
Appleton co.	—sheetings and shirtings, No. 14.
Lowell manuf. co.	—carpets, rugs and cotton cloth.
Middlesex co.	—Broadcloth, Cassimere, Plain and fancy.
Suffolk manuf. co.	—drillings, 14.
Tremont mills	—sheetings, 14; shirtings, 14.
Lawrence manuf. co.	—Printing cloths. Sheetings and shirtings, 14 to 30.
Lowell bleachery	—4,500,000 lbs. bleached per ann.
Boott cotton mills	—sheetings, shirtings & printing cloths, 30, drillings No. 14.
Massachusetts cotton mills	—sheetings 13, shirtings 14, drillings 14.
Lowell machine shop	—machinists' tools and mill-work.

Tons Anthracite Coal per annum.

Merrimack manuf. co.	6,800
Hamilton manuf. co.	3,780
Appleton co.	350
Lowell manuf. co.	2,600
Middlesex co.	4,000
Suffolk manuf. co.	340
Tremont mills.	350
Lawrence manuf. co.	1,000
Lowell bleachery.	3,000
Boott cotton mills.	1,100
Massachusetts "	2,700
Lowell machine shop—1,500 tons hard, 300 chaldrons soft.	1,800

27,620

Charcoal, bushels per annum.

Merrimack manuf. co.	3,555
Hamilton manuf. co.	2,148
Appleton company.	1,000
Lowell manuf. co.	2,000
Middlesex co.	2,000
Suffolk manuf. co.	3,500
Tremont mills.	900
Lawrence manuf. co.	3,000
Boott cotton mills.	1,800
Massachusetts "	2,000
Lowell machine shop.	15,000

35,903

Wood per annum—cords.

Middlesex manuf. co.	400
Hamilton manuf. co.	200
Middlesex co.	700
Suffolk manuf. co.	50
Tremont.	150
Lawrence manuf. co.	120
Lowell bleachery.	500
Boott cotton mills.	70
Massachusetts "	100
Lowell machine shop.	100

2,390

Oil per annum—gallons.

Merrimack manuf. co.	15,000
Hamilton manuf. co.	9,000
Appleton co.	5,400
Lowell manuf. co.—lard 8,000, sperm 5,000.	13,000
Middlesex co.—lard 27,000, sperm 8,000.	35,000
Suffolk manuf. co.	3,600
Tremont.	4,600
Lawrence manuf. co.	8,217
Lowell bleachery.	2,000
Boott cotton mills.	7,100
Massachusetts "	12,000
Lowell machine shop.	3,000

82,917 oil, 35,000 lard—total 117,917

Water Wheels, Diameter.

Merrimack manuf. co.—breast 30 ft., turbine 5 ft.	
Hamilton manuf. co.—5 turbines, 3 breast wheels.	
Appleton co.—2 turbines, each 8 ft. 4 in. in diam.	
1 " " 5 ft. 8 in. "	
Lowell manuf. co.—turbines.	
Middlesex co.—12 and 17 feet.	
Suffolk manuf. co.—13 feet.	
Tremont—13 feet.	
Lawrence manuf. co.—17 feet.	
Boott cotton mills—17 ft., and 2 centre vent wheels as improved by Mr. Francis, 9 ft. 4 in. dia.	
Massachusetts do.—17 feet.	
Lowell machine shop—13 feet.	

Length of do. for each mill.

Merrimack manuf. co.—breast 24 feet.	
Middlesex co.—23, 21 and 45 feet.	
Suffolk manuf. co.—62 feet.	
Tremont—62.	
Lawrence manuf. co.—60 and 80 feet.	
Boott cotton mills—60 feet.	
Massachusetts "	
Lowell machine shop—46 feet in all.	

Flour, barrels per annum.

Merrimack manuf. co.	425
Hamilton manuf. co.	200
Tremont.	100
Lowell bleachery.	600
Massachusetts cotton mills.	40

1,365

Starch, lbs. per annum.

Merrimack manuf. co.	200,000
Hamilton manuf. co.	130,000
Appleton co.	75,000
Suffolk manuf. co.	100,000
Tremont.	75,000
Lawrence manuf. co.	140,000
Lowell bleachery.	260,000
Boott cotton mills.	180,000
Massachusetts "	220,000

1,380,000

How Warmed.

All by steam.

Name of Agent.

Merrimack manuf. co.—I. Hinckley.	
Hamilton manuf. co.—John Avery.	
Appleton co.—Geo. Motley.	
Lowell manuf. co.—Alex. Wright.	
Middlesex co.—O. H. Perry.	
Suffolk manuf. co.—John Wright.	
Tremont mills—Chas. L. Tilden.	
Lawrence manuf. co.—Wm. S. Southworth.	
Lowell bleachery—C. A. Babcock.	
Boott cotton mills—Linus Child.	
Massachusetts cotton mills—Joseph White.	
Lowell machine shop—Wm. A. Burke.	

Average wages of Females clear of board, per week.....\$2 00

Average wages of Males clear of board, per day.....\$0 80

Medium produce of Loom, No. 14 yarn, yds. per day.....45

Medium produce of a Loom, No. 30 yarn, yds. per day.....33

Average per Spindle, yards per day.....14

The Middlesex company make use annually of 600,000 teasels, 1,716,000 lbs. fine wool, 80,000 lbs. Glue, \$60,000 worth Dye Stuffs, and \$17,000 worth of Soap. They also own the Wamesit carpet mill, on the Concord river, where are consumed, annually, 93,600 lbs. coarse wool, and 36,400 lbs. of worsted yarn, producing 91,000 yards Ingrain carpeting.

The Lowell machine shop, included among the above mills can furnish machinery complete for a mill of 6,000 spindles, in three months, and a mill can be built in the same time.

The several manufacturing companies, have established an hospital for the convenience and comfort of persons employed by them respectively when sick, which is under the superintendence of one of the best of surgeons and physicians.

There are two institutions for savings—The Lowell and the City. The Lowell had on deposit, the first Saturday in October, 1849, from 4,650 depositors, \$792,291 90. The City, the same time, had on deposit, from 615 depositors \$75,970 51. The operatives in the mills are the principal depositors in the above banks.

Railroads.—In last years' statistics a full account was given of the different railroads to and from Lowell, which were then in operation, showing that the railroad communication Lowell has with all parts of the country is as complete and extensive as from any other point in New England or elsewhere. Within the last year a direct road to Salem from Lowell has been projected, and will be completed in the course of the ensuing summer. The facilities thus afforded, enable passengers from Lowell for New York, Albany, or any of the intermediate places, as well as for the northward and eastward, to go through as expeditiously and as cheap as from Boston.

The city is soon to be lighted with gas,—the works and necessary preparations for its use, being entirely completed.

The Magnetic Telegraph will soon be in operation here—the posts and wires are all up between Boston and Burlington, and an office will shortly be opened by the Vermont and Boston telegraph company, in this city.

The fire department of Lowell, is very efficient and well organized,—in fact, as has been well said before, none can be more so.

A Reservoir, of great capacity, has been built on the high ground in Belvidere, east of the city, for the purpose of furnishing a ready supply of water to any part of the city, in cases of fire. The water is conveyed into the reservoir by force pumps from the Lowell machine shop—Merrimack, Boott and

Massachusetts mills. Pipes are laid from the reservoir to various parts of the city, at which points hose can be attached to the hydrants without delay, when necessary.

There are three banks—The Lowell, capital \$200,000—the Railroad, capital \$600,000—the Appleton, capital \$150,000.

There is a valuable library of 7000 vols. belonging to the city, to which any one can have access by paying fifty cents per annum.

Other manufactures are produced in the city, than those specified above, of a value of \$1,500,000, employing a capital of \$400,000, and about 1,500 hands.

A vast amount of laudable and successful enterprise of a more strictly private character, might not be inappropriately alluded to in this sheet, not the least of which are the extensive powder mills of Oliver M. Whipple, Esq., and the paper and Bating mills of Perez O. Richmond, Esq., both on the Concord river, within the precincts of the city. Messrs. Fisk & Forcross' extensive lumber yard and saw mills, on the Merrimack, are also worthy of notice.

The population of Lowell in 1828 was 3,532. It is now (1850) estimated at 35,000.

Institution of Mechanical Engineers.

At a meeting of the above institution held at Birmingham, November 24th, R. Stephenson, Esq., M. P. in the chair, the following papers were read: On the Construction of Railway Axles—By J. E. M'Connell.

Continued from page 51.

It must be evident that this can only be an approximate result, but we found that these proportions enable us to attain the nearest approach to a regular curve in bending the axle; and it is worthy of notice, when the dimensions of the axle at the journal and in the boss of the wheel are determined, a calculation to ascertain the exact proportion between the wheels seems to confirm the above statement of dimensions in the eighth experiment. The greatest strain to which this portion of the axle is subject being received at the bottom flange of the wheel, and transmitted through its radius, the amount of strain which any portion of the axle has to resist is inversely as its angular distance from the point of impact is to the radius of wheel. Assuming the blow on the flange of the wheel to exert a breaking force equal to 102,229 lb., and the diameter of the axle to be 4.71 inches to resist this blow, then, dividing the axle into four equal spaces to the centre, the proportionate breaking force at each point would be as follows:—At the first, 94,381 lb., relative diameter, 4.59 inches; at second, 80,696 lb., relative diameter, 4.35 inches; at third, 67,987 lb., relative diameter, 4.11 inches; at fourth, 58,829 lb., relative diameter, 3.92 inches. With regard to engine axles, these proportions will apply where no circumstance exist of employing the centre of the axle for transmission of power. The crank axles of locomotive engines cannot be treated by any of the rules applicable to straight axles; and our experience would seem to prove that, even with the greatest care in manufacturing, these axles are subject to a rapid deterioration, owing to the vibration and jar which operates with increased severity, on account of their peculiar form. So certain and regular is the fracture, at the corner of the crank from this cause, that we can almost predict in some classes of engines the number of miles that can be run before signs of fracture are visible: a certain amount of injury can be prevented by putting counterbalance weights opposite to each crank, which lessens the vibration very considerably. It is right to observe in this place, that to some extent the injury to all axles may be increased if the wheels in which they are fixed are not properly balanced; and I have no doubt that a great portion of the constant vibration to which they are subject may be traced to the knocking action of the wheel upon the rail, owing to a want of balance. The question of deterioration of axles arising from the various causes which I have enumerated, is a very important one to all railway companies: that some change in the nature of the iron does take place is a well-established fact, and the investigation of this is most deserving of careful attention.

I believe it will be found that the change from

the fibrous to the crystalline character is dependent upon a variety of circumstances. I have collected a few specimens of fractured axles from different points, which clearly establish the view I have stated. It is impossible to embrace in the present paper an exposition of all the facts on this branch of the subject; but so valuable is the clear understanding of the nature of the deterioration of axles, that I am now registering each axle as it goes from the workshops, and will endeavour to have such returns of their performances and appearances at different periods as will enable me to judge respecting their treatment. When it is considered that on the railways, of Great Britain there are about 200,000 axles employed, the advantage of having the best proportions, the best qualities, and the best treatment for such an important and vital element of the rolling stock, must be universally acknowledged.

Remarks.—The President said, that Mr. McConnell had expressed a strong opinion, that a change took place from a fibrous structure in iron to a crystalline one during the time of its being in use; and it would be satisfactory if an instance could be pointed out where this change had occurred, owing to vibration or any other treatment, for he had not been able to satisfy himself, from many experiments, that any such molecular change took place. Hammering a piece of hot iron till it is cold produced a hardness called crystalline; but the question for consideration was, supposing an iron axle were annealed by heating to a dull red heat and being allowed to cool slowly, would the "texture" of that iron undergo any alteration afterwards, from the vibration of the railway or any piece of machinery they were in the habit of employing? He had not been able to detect an instance of the kind; and in giving evidence before the Iron Girder Bridge Commission, he mentioned cases of vibration going on from year to year without any sensible change occurring in wrought or cast iron. For instance, they had the Cornish engine-beam with a strain of 50 lb. per inch, working 8 or 10 strokes per minute for more than 20 years; and certainly if a molecular change was introduced by vibration, it ought to be by that continual concussion and vibration, but none was perceived. Again the connecting-rod of a locomotive was a piece of iron in a most perplexing situation, for one having more to do and having the strain changed more frequently it was difficult to conceive; and yet he had known the connecting-rod of a locomotive engine to vibrate 8 times in a second for several years' regular work, making more than 200 million times altogether, but the iron retained its fibrous structure; and he thought axles could not be subject to so much vibration. When, therefore, he found that a connecting-rod did not change its molecular texture, must say there were good grounds for doubting that iron changes its state in axles. Then with regard to the experiments made by Mr. McConnell with a view to ascertain where axles were most exposed to tension, he could not quite agree with him; for he subjected the wheels and axles to a slow, steadily increasing pressure, till he bent the axles in different positions. The results were correct as far as regarded the slow pressure on the flanges of the wheel under the circumstances of the experiments recorded by him, but they were not a faithful representation of what takes place in practice, for it would be found that when the wheels of a carriage jarred, a violent blow was inflicted on the rail, and the strain on the axle was totally distinct from a slow pressure. He would refer to the experiments made some years ago by Mr. John Gray, on the Hull and Selby railway, and which were published in the *Civil Engineer and Architect's Journal*, or the *Mechanics' Magazine*, to show how important is the element of time in the fracture of an axle. He took a round bar of iron 3 feet long and 2 inches diameter, and turned it down in the middle to 1 inch in diameter for 2 inches in length. He then took another bar, 1 inch in diameter uniformly throughout, and he tried the strength of these bars under concussion and not mere pressure. Now the severest point of strain would evidently be the middle of the bars where the diameter was the same in both, and consequently if weights were gradually and quietly laid on, the results would be alike in both bars; but when small weights were let fall on them, the bar 1 inch in diameter through-

out its whole length was found to be much stronger than that which was in the main 2 inches and one in the middle. For as time is an element when the resistance of material is concerned, regarding the axle as an elastic like a piece of india-rubber, the only particles that could yield to percussion from the falling weight, where those between the shoulders in the part of the axle that was turned down, but in the case of the bar an inch in diameter throughout, its whole length, the whole of the particles would yield; the one being a good spring and the other being a very bad one. If therefore appeared to him that the experiments recorded by Mr. McConnell, though correct as regarded the position in which he put them, were not correct as regarded concussion. The axles rarely if ever broke in the middle, but generally at the end close to the boss of the wheel, because the sudden change in the elasticity of the axle at the point; the portion of the axle fixed within the boss of the wheel being very rigid whilst the rest remained elastic, which caused the vibrations to be suddenly checked at that point. No doubt the plan of weakening axles in the middle had done good because it made them spring, and in crank axles it relieved the strain in the cranked part.

Mr. Henry Smith suggested that in the case of bar-iron, the exterior portion had greater tenacity than the interior or under part; and the strength would be more proportionately diminished where exterior portion was cut through. He also referred to some experiments in which he had cold-hammered fibrous iron till it became crystalline, and the effect produced corresponded with the description given by Mr. McConnell of the fractured axles.

Mr. McConnell observed, that he had met with several cases of broken axles in which a distinct annular space was observable all round the surface of fracture, that was quiet short-grained and appeared changed into a crystalline texture, whilst the centre of the axle remained fibrous. He admitted that his experiments were only approximate, and that he had not put the strain in the natural way; but it was almost impossible to do so in consequence of the great trouble and expense that would accompany it; at the same time the results had been confirmed by calculation. With regard to the axle fitting into the wheel, they now allowed only a very small shoulder, not exceeding a sixteenth of an inch; and this shoulder was not square but tapered, and the boss of the wheel was slightly coned to fit the shoulder.

Mr. Cowper did not believe that any axle which when broken proved to be crystalline had ever been fibrous in its character.

Mr. Ramsbottom considered that a change took place in the axle from the effect of mere mechanical action, and his observations tended to confirm him in that opinion. Some time ago he selected an axle which had not a very good form of journal, and the end broke off with two blows of a 12 lb. hammer. This axle had for three years been subjected to a strain vertically, which was reversed at every revolution, and it came off with a crystalline fracture. He then tried the part that had been within the boss of the wheel, which had not been subject to this great strain, and found the strength was very much greater than that of the journal, for it required 79 blows to break it off, and in that case the fracture was fibrous. A parallel case might be observed with reference to an ash stick, which if doubled would break with a fibrous fracture; but if subjected to vibration, however slight, running through it a great number of times, it would break in a different mode. He thought the strain on a locomotive connecting-rod was by no means so great for the sectional area as upon an axle-journal; and the latter had two reversed strains for every revolution of the small wheels, but the connecting-rod had only two for each revolution of the driving-wheels.

The President said, he was only desirous to put the members on their guard against being satisfied with less than incontestible evidence as to a molecular change in iron, for the subject was one of serious importance, and the breaking of an axle, had on one occasion rendered it questionable whether or not the engineer and superintendent would have had a verdict of manslaughter returned against them. The investigation hence required the great-

est caution; and in the present case there was not evidence to show that the axle was fibrous beforehand, but crystalline when it broke. He therefore wished the Institution, connected as they were with the manufacture of iron, to pause before they arrived at the conclusion that iron is a substance liable to crystalline or to a molecular change from vibration. For his own part, he was now induced to look upon wrought-iron as literally elastic, like a piece of india-rubber; for in the case of the Britannia Tubular Bridge, where they had two 10 inch square chains or bars, each 100 feet in length, it was found that before the tube was raised, the chains or bars stretched nearly 2 inches in length at each time of lifting, but resumed their original length when the chain was withdrawn; the same action being repeated every time the tube was lifted. He could therefore only regard these 10-inch bars of iron analogous to a piece of india-rubber.

Mr. McConnell said, he had one specimen of an axle which he thought furnished nearly incontestible evidence of the truth of his position, that a change took place in the texture of the iron. One portion of this axle was clearly fibrous iron, but the other end broke off as short as glass. The axle was taken and hammered under a steam hammer, then heated again and allowed to cool, after which they had to cut it nearly half through and to hammer it a long time before they could break it.

The President remarked, that this was a case of converse reasoning; for it was an instance of a piece of crystalline iron being converted into fibrous iron. Iron when it was once heated and allowed to cool gradually, acquired a close and fine grain, but became neither crystalline nor fibrous; if cooled suddenly it acquired a crystalline grain, and if rolled while being cooled it became fibrous, but he did not think that it underwent any molecular change from mechanical action after it was cold.

Mr. Henry Smith observed, that throwing cold water upon hot journals did great injury by crystallising that portion of the axle.

Mr. Slate did not think that any change from a fibrous to a crystalline texture was produced in iron unless it were strained beyond the limit of its elasticity. Some of the pump-rods in Staffordshire which had been in use for 18 years, were subject to a strain of 34 tons per square inch; and a short time ago he had occasion to ascertain their actual performance with reference to this very question, and this not being considered conclusive, he had made a machine in which he had put an inch square bar subjected to a constant strain of 5 tons, and an additional varying strain of 2½ tons, alternately raised and lowered by an eccentric 80 or 90 times per minute, and this motion was continued for so long a time that he considered it equal to the effect of 90 years' railway working, but no change whatever was perceptible; and therefore he was one of those who did not believe in a change from a fibrous to a crystalline structure in iron. He remembered a case where a question having arisen as to the manufacture of a certain shaft, it was agreed to hammer it until it split, as a means of discovering the nature of the manufacture of the shaft: the result was satisfactory; and the iron appeared still fibrous in texture.

The further consideration of the paper was then adjourned, and the Chairman said he wished that more of the members had been present at the meeting, and hoped they would attend and assist it the further discussion of the subject.

The third and last paper read was "*Nasmith's Patent Girders and Fire-proof floors*," contributed by Mr. S. Lloyd, of Wednesbury. The paper was illustrated by drawings and models. A discussion followed the reading of the paper, and after a vote of thanks to the President, the meeting adjourned.

Iron Masters' Meeting.

We give below the proceedings of a meeting of iron manufacturers recently held in Baltimore.—As we have of late said and written so much in reference to the necessity of a further protection to the iron interests of the country we must content ourselves with simply copying the proceedings of the meeting referred to:

At an adjourned meeting of the iron masters and others interested in the manufacture of iron in Maryland, held at the Exchange Hotel on the 2d inst.,

S. S. Lee, Esq., made the following report on behalf of the committee who had been appointed at a previous meeting to report upon the present depressed condition of the iron interest of the State:

The committee appointed at the meeting of the iron masters, held in Baltimore on the 3d November, to report upon the present depressed condition of the state, respectfully report:

That, in the discharge of the duty assigned them, they have obtained information from every furnace and rolling mill in the state. The number of furnaces is thirty-one: the number of rolling mills for bars and railroad iron is five. Of the furnaces eleven have stopped within the last two years, and six more have discontinued their mining operations, and are stopping as fast as the material on hand is used up. Those now at work must also stop, unless there is a change in the condition of the trade.

The rolling mills for the manufacture of bars and railroad iron show even a more disastrous condition of that branch of the iron interest of the state. Of the five mills, only one is at work, and that one but partially so; the others having been compelled to discontinue their operations, the price for English bars and rails having ruled below the cost of producing them for the last two years.

The amount of iron produced when the works are in operation is about 55,000 tons of pig, and about 20,000 tons of bars and rails per annum. In the manufacture of this amount of iron, support, is given to nearly 50,000 persons in our own state;—while in the coasting trade incident to it, a large number of men are employed from other states; for a great portion of the pig iron made in Maryland is carried to the manufacturing districts of New England by their coasting vessels, and most of the bars and rails to other parts of the country.

Your committee finds the chief cause for the extraordinary depression of the iron interest to exist in the fluctuations of the English and Scotch markets, growing out of interruptions in the usual channels of their trade; for whenever such interruptions occur, as in '41 and '42, and in the past two years, '48 and '49, their surplus production is thrown upon the American markets, glutting it, and thereby causing the stoppage of our works, and the consequent ruin of a large number of our manufacturers.

Your committee can see no remedy for this, so long as the present duty on iron remains unchanged, and the very great difference in wages between the countries exists. The English and Scotch iron masters have perfect control over their labor, until it is reduced almost to the point of subsistence, through their thorough organization, the low interest on capital, and the superabundance of laborers—while, in the United States, the demand for labor is such that the iron masters cannot reduce wages below the price paid to laborers in other branches of business. At the regular quarterly meetings of iron masters in England, the price of iron for the ensuing quarter is declared, and the price paid for labor depends upon the price of iron so declared.

The power which they possess over their labor is exhibited in their ability to reduce the price as the necessity of the case may require, and still continue to manufacture it. For example: during the years 1845, 1846 and 1847, the price of bar iron at Liverpool averaged respectively £9 4s., £9 13s., and £9 17.; and before the close of 1848 the price was reduced to £4 15s., and has varied but a few shillings from that time to the present, showing a reduction in less than twelve months of nearly 50 per cent. In Scotch pig iron the reduction has also been as great. In 1845 the average price was £4 0s 3d., and in 1848 the average price was only £2 2s., and at that extreme low price it has continued to the present.

From the most reliable information your committee have ascertained the cost of charcoal pig iron in the vicinity of Baltimore to be from \$22 to \$23 50 per ton, and in the making of that iron the material—ore, wood, &c., as it stands in and on the ground, is worth only from \$2 to \$3 per ton; the difference between the material and the cost being the wages paid in its manufacture.

There are situations in the state where coal and ore are so contiguous that coke iron can be produced at a less cost; but when the transportation to market is added, the cost there does not differ ma-

terially.

The experience of the last four years has shown that the *ad valorem* duty, without a minimum, as laid by the tariff act of 1846, has operated very injuriously to the interest of the American manufacture. For when the price of iron is high abroad, the duty is high at home, giving to our manufacturers an incidental protection, which continues so long as the foreign market remains high; but as soon as the foreign market fluctuates the duty falls with it, so that at the time when the highest duty is needed by us to enable us to sustain a competition with the foreign manufacture, the protection which we had received from the duty is taken from us—thus acting as a *sliding scale against* the American manufacture. When the tariff act of 1846 was passed, the 30 per cent. duty on the price of iron at Liverpool, (\$50) was \$15 per ton; the cost and duty added made the price \$65. But for the last two years the price has fallen from \$50 at Liverpool to \$27 per ton, and the duty from \$15 to \$8 per ton—making the cost of iron and duty \$35 per ton, a fluctuation of \$30 per ton.

To sustain our manufacture we require the reverse of the operation of the *ad valorem* duty.—When the price abroad is highest we need the least duty; and when it is lowest we need the highest.

It is of the greatest importance to the prosperity of the American manufacturer that the fluctuations of the foreign market should have as little effect as possible upon our own. They may be lessened by a fixed specified duty on the part of the government, or by sliding scale of duties in favor of our manufactures, *not against them*, as our present *ad valorem* duty produces.

We do not ask for excessive or prohibitory duties but we respectfully ask, in collecting the duties necessary for the operations of the government that they be so arranged as to *foster and promote* the American manufacture.

Your committee would call your attention to the very large quantity of Scotch pig iron and bars, which the foreign manufactures have sent into the markets of this country in the last year. Availing themselves of the low duties, they have sent large stocks of iron to our markets, which from the very low rates of interest on capital at home, they can afford to hold until the regular wants for consumption absorb them.

In like manner has the *ad valorem* duty operated upon other important interests of our state, in the manufacture of many articles from iron. The shipping of Baltimore has been supplied with cables and anchors of the manufacture of Maryland until within the last two years, but the great fall of prices abroad, and consequently the duties at home, has caused those establishments to be closed, and the business to be entirely stopped.

Your committee would therefore recommend that the condition of our works, and the causes which have produced it, be made known to our Representatives in Congress by a committee, who shall urge upon them the necessity of such modification in the arrangement of the tariff necessary to the support of government as will afford us all the benefit of incidental protection, in the collection of the revenues—either a specific duty, which is the most simple, or a sliding scale which shall increase the duty with the fall in price in the foreign markets.

Respectfully,

JOHN BARKER,
STEPHEN S. LEE,
E. T. ELLIOTT,
PETER MOWEL,
H. ABBOTT,

Committee.

The report having been read, it was unanimously adopted.

E. Pratt, Esq., moved that a committee of ten be appointed by the chair in accordance with the recommendation of the report; and that said committee have power to fill any vacancies which may occur.

The resolution was adopted, and the following gentlemen appointed as that committee, viz: E. T. Elliott, E. Pratt, Stephen S. Lee, Peter Mowel, of Baltimore; C. E. Detmold, John S. Graham, of Alleghany; Joshua Bryant, Isaac Rodgers, of Hartford; Messrs. Richard Green, Robert Howard, Baltimore county.

And, upon motion, the proceedings were ordered to be published.

THE ELECTRIC TELEGRAPH—ELECTRICAL DISTURBANCES.

Electrical disturbances of a kind which do not manifest themselves in discharges of lightning, or involve life or ordinary property in danger, are quite sufficient to derange the operations of the telegraph. During snow and hail-storms, whilst dry fogs are prevailing, when the aurora borealis appears, and, in truth, during most meteorological changes, much electricity is developed in the atmosphere. It is sometimes directly transferred to the telegraph wires, but as frequently its action is only indirect. A body in which free electricity is in any way developed determines a similar electrical condition in an insulated mass of metal near it, exactly as a magnet induces magnetism in pieces of iron placed in its neighborhood. Thus an electrical cloud floating above the extended wires generates a current of electricity in them, or to speak more strictly, causes the electricity naturally present in a latent state in the wire to become free and move along the metal. The currents which thus travel, as well as those which are directly transferred from the atmosphere, have the same effects on the index needles and signal bells as the electricity purposely sent along the wires from the battery. The needles are swung unceasingly to and fro, or remain for hours deflected to one side. The bells ring violently at irregular intervals, or stop only when their weights are run down. Signals cannot be transmitted at all when atmospheric electricity is thus largely developed; and they become more or less confused whenever it is sufficiently powerful to affect the index needles. Apart altogether from its practical importance there is something exciting in the contemplation of these strange atmospheric influences. It must be not a little startling to the drowsy occupant of some solitary telegraph station to be roused from his midnight slumber by the spectral clanging of his signal bell, bidding him quail at the wild quiverings of the magnets, now swayed plainly by no mortal hands. An imaginative man might then well recall the legends which tell of disembodied souls sent back to this earth to divulge some great secret of the world or spirits, and seeking in vain for means of utterance, which shall be intelligible to those in the body. A philosopher, too, might accept and interpret the legend; for it is sober truth that the apparently aimless and meaningless movements of the magnetic needles when vibrating at such times are, after all, the expressive finger-signs of a dumb alphabet, in which nature is explaining to us certain of her mysteries; and already, too, we are learning something of their significance.—*Edinburgh Review.*

MONTHLY ARRIVALS of Steamboats, Barges, Flats, and Keels at the Port of St. Louis for the Year 1849, with Harbor Master's Fees for Wharfage, &c., as taken from the Harbor Master's books.

	Steam-boats.	Flats & keels.	Tonnage.
January.....	52	—	11,954
February.....	98	—	23,615
March.....	358	26	75,835
April.....	388	27	85,123
May.....	262	8	62,756
June.....	64	6	14,333
July.....	157	7	38,358
August.....	213	12	43,323
September.....	312	7	60,865
October.....	287	3	57,120
November.....	336	46	61,584
December.....	248	19	55,034
Totals.....	2775	161	590,139

THE BRITANNIA BRIDGE.

The operation of raising by the hydraulic machines the second monster tube, of 1,800 tons, to its intended elevation of 100 feet above sea-mark was commenced by the engineers on Tuesday, the 18th inst., 14 days only having elapsed since the day on which it was successfully floated. The action of the hydraulic presses in the towers was found to be most perfect and precise, as in their first play on the stupendous mass communicating with the chains it was worked steadily 6 feet upwards. Immediately after, the bricklayers and masons entered the recesses of the towers, and built it up firmly beneath.

The instant the masons left it another 6 feet lift was taken, and in this manner the operation is being carried on without intermission day and night, during the latter period with the assistance of large lights and fires.

An iron warehouse for California is now in course of being constructed at Liverpool, of very considerable dimensions. It is 60 feet long, 40 wide, and 36 high at the most elevated part. There will be three ranges of rooms. It is lighted by 60 windows, and will weigh rather more than 30 tons.

Lake Commerce.

The Oswego Commercial Times has the following table of collections at the custom houses from Chicago to Ogdensburg, for the year 1849:

District of Chicago.....	\$4,349 79
Cape Vincent.....	2,778 59
Sandusky and Cleveland.....	1,096 60
Detroit.....	7,846 60
Oswegatchie and Ogdensburg.....	5,802 05
Sag Harbor.....	4,100 00
Buffalo and Erie.....	38,280 03
Genesee and Rochester.....	13,906 02

Total.....	\$78,189 14
Collection at the port of Oswego, from the first day of March to 31, Dec., 1849.....	\$90,542 50
Collected above, brought down.....	78,189 14

An excess of.....\$12,353 36 collected at Oswego beyond all other ports (American) on the chain of lakes.

Railways in England.

In closing our present volume, we should have been glad if it had been in our power to offer any congratulations to our readers upon the improved aspect of railway property. From that gratification we are debarred; and we cannot enter upon the new year with any augury of increased prosperity. It remains only, by renewed vigilance and economy, to repair to the utmost the injury wrought by the faults, follies and frauds of the past; to give a vital energy to Boards of Direction by the introduction of really working men, as suggested in the report of the committee of investigation of the Caledonian company:—to demand the most specific, plain, and full detail of expenditure in every department; to exact from the Directors that amount of responsibility which is indicated by a sound, ample and permanent investment in the stock of their own lines—only, if possible; and to await with patience that restoration which, under God's providence, the prosperity of the country cannot fail to impart to its greatest and most powerful agent—the railway system.—*Railway Times.*

Missouri Iron.

It is acknowledged that Missouri contains within its limits perhaps the most remarkable deposits of iron which are known to exist. One of these bears the name of the pilot Knob, situated in Madison county, about ninety-six miles south of St. Louis, and about six miles distant from the Iron Mountain. The St. Louis Republican says—

The Knob, as a deposit of mineral and in its formation, is one of the greatest curiosities in the world. It stands in the valley of a small stream, with a base covering an area of nearly three miles, rising to a height of several hundred feet. At the base, large masses of red granite rock show themselves, as if pushed or forced out, whilst the superincumbent masses of iron ore present the appearance of having been forced upwards by some terrible convulsion of nature. All the sides are covered with boulders and slabs of iron ore, of great purity, but their depth has not been satisfactorily ascertained. On the apex, the evidences of the causes which have produced this deposit are conclusive. There are found immense slabs of pure ore, twenty and thirty feet long by as many wide, and of varied thickness, from six to twelve or more inches, standing in positions, and of a formation, which leaves no doubt in the mind of the spectator that they were forced there in a state of fusion and by some tremendous internal action. The whole is of so peculiar a formation, so unlike anything to be

seen elsewhere in nature, that it is hardly possible to convey to the mind any thing like an accurate description of it. If we had the ability, we have not the space to attempt it now. It must suffice to say, that the ore is of the purest kind, and in quantity sufficient, if it could be brought into use, to supply the world for many centuries.

Extensive works for the manufacture of iron are now in operation at the Pilot Knob.

Prize Oxen and those who Fed Them.

The beast and his driver furnish us with some strange contrasts. The ox has been petted from his youth upwards. * * * The driver sent into the world to be the slave of the ox, living in the foulest of dens, harrassed by day with the toil, by night with the anxiety of providing for the hunger [scarcely ever satisfied] of the next day; fed with the coarsest of food, of less value to his employer than the cattle, the implements, the bricks and mortar of the farm. Measured against the prize beast the laborer's value shrinks into nothing.—His parish would be but too glad to make a present of him, and a hundred like him, to any man or nation under the sun. What, however, must be his feelings if he is taken, into the cattle show?—He will find thousands of lookers on, who discourse with rapture of the fat oxen, with unction and scientific precision on clovers, on oil cake, and on everything which makes oxen fat; on everything except the poor human laboring machine himself, and others like him, whose highest mission seems to be to form a cheap link of communication between the fat beast and the rich owner.—*Historic Times.*

Railroads.—The Boston Journal says that the great improvement in the means of transit in Massachusetts by the introduction of railroads, is well illustrated in the little volume containing the rules of the House of Representatives, and a list of the members, with their residence while in the city.—The Journal gives compiled for the official list showing the number of members who reside at home and those who reside in the city during the present session of the Legislature. Of the Senate 12 reside at home and 22 in the city. Of the House 86 reside at home and 169 reside in the city.—Some who reside at home live at a distance of 40 miles from the city.

During the session of 1843 all the members of the Senate but 4 then resided in the city during the session, and of the House 24 then resided at home and 287 in the city.

Railroad Meeting in Bangor.—The Bangor Whig contains an advertisement calling a meeting in that city of those interested in the organization of the Penobscot and Kennebec railroad. The editor says in referring to it—"It will be seen that immediate measures are to be taken here to enlist the enterprise of our people in favor of an iron river from here to Waterville with an open navigation all the year.

Ohio.

We learn from the Governor's Message that the total amount of payments into the Treasury, during the past year, is \$2,511,119 37, and the total disbursements \$2,176,681 04—leaving a balance applicable to payment of State indebtedness of \$334,438 33; and to this amount is to be added the appropriations for redemption of State bonds, which makes the total amount applicable to payment of the State debt during the year 1849, \$632,751 41.

The total receipts from the canals and public works for the last fiscal year were \$731,173 50, being a falling off from the receipts of 1848 of \$42,380 87—occasioned by the prevailing epidemic, and the failure of the wheat crop.

Wm. O. Collins, Esq., President of the Hillsboro' and Cincinnati railroad company, is at the

Madeira House, prepared to exhibit, to such of our citizens as take an interest in the matter, the maps and charts, which show the direction and topography of the route, as well as the estimates on such part of it as have been let.

* Through the politeness of Mr. C., we have seen the documents, and must express our gratification and surprise with the highly favorable character of the route, and the very satisfactory prices to stockholders at which the work has been let. The grubbing, grading, clearing and masonry, on 35½ miles of the 37½ of the whole line have been put out at the sum of \$70,350! if even so large an addition as \$10,000 have to be added for extra charges, it is questionable whether so cheap a work can elsewhere be found. For 8 miles the route pursues up Obanon creek and its tributary, Spencer's Fork.—Then, it mounts the table land, by an easy ascent, and pursues a course nearly level to Hillsboro.—Going westward, the track is nearly all the way on a gentle declivity. Most of the contracts have been taken by the farmers through whose lands the road will pass—many of whom receive a moiety of their pay in the stock of the company.—*Scioto Gazette.*

New York.

At a meeting held at Buffalo on the 23d inst. to appoint delegates to the Genesee Convention, the following resolution was adopted:

Resolved, That, as the sense of this meeting, the citizens of Buffalo will, either in their individual or corporate capacity, subscribe \$500,000, if necessary, to construct a railroad from some convenient point from the New York and Erie road to Buffalo.

The delegates to Genesee were: J. T. Dudley, O. Phelps, Wm. Ketchum, Wm. Wallace, E. Peshine Smith and H. Shumway.

A meeting has been held at Penn Yan to consider the propriety of constructing a railroad from Canandagua to Jefferson. The people in Yates and Steuben Cos. are moving upon the subject.—It is believed that a capital of \$800,000 would be amply sufficient to complete the enterprise.

A meeting of those interested in the completion of the Cape Vincent and Rome railroad, took place lately at Kingston, Canada. Mr. Phelps, one of the contractors, expatiated largely upon the advantages to Kingston, to be derived from the proposed road, when completed. Fifty miles of the road to Pierpoint's Manor are graded, and fit for the rails. It was the intention of the directors to open the road to Williamstown, by June next; and to Pierpoint's Manor, by September; and thence to Watertown the road would be opened as soon as the practicable means could be obtained.

Pennsylvania.

Pittsburgh and Erie Railroad.—We understand that 15,000 shares, amounting to \$750,000, have been subscribed to the Pittsburgh and Erie railroad, and \$35,000 paid in. This is a noble beginning, and in energetic hands will secure the certain and speedy construction of the road. This will open up all that region to the Pittsburgh market, and offer the shortest route to the lakes. Our great Western road will certainly commence with brilliant prospects. It will have connections with the lake, by railroad, at Erie, Cleveland, and Sandusky, and thus have immediate access to the immense trade of the lake region.—*Pittsburgh Gazette.*

Ohio.

Cleveland and Pittsburgh Railroad.—A meeting of the board of directors of the Cleveland and Pittsburgh railroad company was held at their office, in Ravenna, last week. We understand there was a full attendance, and much business transacted. Permanent plans were adopted for completing the road within the time specified in the contract with Messrs. Chamberlain & Co. Entire confidence is

felt that we shall have the cars running upon seventy miles of the northern end of the road by the first of November next. The best of feeling prevails along the line. The rights of way are all settled, and most of the depot grounds secured. Contracts are being made for wood, for fuel at different points. Estimates to the amount of about \$30,000 have been paid during the last month. Soon after the spring opens the iron horse, with his tremendous power, will be brought upon the road, to aid in its construction.

We have truly a "working board of directors," who deserve all honor for their indomitable perseverance. Our editorial blood circulates more briskly as the time approaches when we are to shake hands with our good friends in Cleveland, in about an hour's time, after leaving Ravenna.—"Look out for the engine when the bell rings."—*Ravenna Whig.*

Kentucky.

A railroad meeting was held at Lexington recently, for the purpose of taking into consideration the various roads projected in different portions of the State which are to centre at that city. The attendance was respectable and the spirit manifested argued well for their speedy construction.—The Observer says:

The meeting was very ably and eloquently addressed by Gen. Combs, of this city, Mr. Barbour, of Danville, and Gen. Collins, of Mayesville.—Their speeches were full of information, and produced a very happy effect. Each of the gentlemen seemed to have the great works deeply at heart, and to entertain but little doubt of their ultimate completion. Whether their construction is to be immediate, as is greatly to be desired, or postponed to some remote period, depends of course upon those at the termini and along the whole line of the works, who are deeply concerned. We will not permit ourselves to doubt that the good sense and sagacity of our citizens will suffer them to be altogether defeated or to lag for want of proper encouragement.

A series of resolutions were passed, and the meeting adjourned to meet again on the second Monday in February.

Massachusetts.

Boston and Worcester Railroad.

The late report of the Directors of this road gives the following exhibit of its operations for the past year:

The income during the year ending Nov. 30th 1849, is \$703,361—the total expenses, \$499,443, and the net income for the year, \$278,408; of this, \$270,000 has been divided in two semi-annual dividends.

The increase of the construction account, from Nov. 30th, 1848, to 1849, is \$257,939, nearly all on contracts made previous to the 1st of June last.—The income for freight is less than the year previous. This is attributed to the depressed state of manufactures. The reduction of fares also decreased the passenger receipts, although the number carried exceeded that of any former year by \$1,604,340 passengers carried one mile.

An account is given of the cost of its six branches, the expense of running, and the receipts. From this it seems that the Millbury, the Saxonville, the Newton Lower Falls, and the Brookline branches are run at an apparent loss of about five thousand dollars. Only one, the Milford, barely pays the expenses of running.

The following was the financial condition of the road, Dec. 1, 1849:

Total construction account.....	\$4,908,332 40
Materials on hand.....	414,658 95
Total investment.....	\$5,322,991 35
Capital paid in.....	\$4,500,000 00
Debts.....	679,582 00
January dividend.....	135,000 00
Reserved income.....	8,408 00

To meet this debt, the directors recommend the creation of new stock, if leave can be obtained from the legislature, not to be issued below par. They propose to sell a large quantity of land, the cost amounting to about \$300,000, and the value esti-

mated at \$441,000, belonging to the corporation and not required for its use.

Massachusetts.

Western Railroad.—The annual report of the business of this road shows that the receipts for the year 1849, ending 30th November, were \$1,343,810.57, the expenditures \$588,322.58, net earnings \$755,287.99, being \$12,000 more than in 1848, and the expenses \$64,000 less. The whole cost of the road has been \$9,926,951.78.

There has been paid into the sinking funds the sum of \$459,578.62; and there is a balance of construction funds unexpended of \$82,989.60.

The number of through passengers in 1849, was 33,751 and of weigh passengers 402,053. The quantity of freight in 1849 was 81,728 going West, and 191,889 coming East—being 673,608 tons moved equivalent to 172,589 over the whole road. The number of barrels of flour conveyed was 590,165.

The whole number of shares of the company is 51,200. The state holds 11,004, the Massachusetts sinking fund 210, Massachusetts school fund 550, and corporations and individuals 39,736. There are 2810 individual stockholders. The company owns 8-10, ton and 6-15 ton passenger engines, and 5e freight engines, most of which are 20 tons; and 54 passengers and 850 freight cars.—*Transcript.*

Maine.

Kennebec and Penobscot Railroad.—A large and spirited meeting was held at Bangor on the 22d ult. to take into consideration the extension of the Androscoggin and Kennebec railroad to that city.

The meeting was organized by the choice of General Samuel P. Strickland, of this city, as President, Joseph Kelsy, Esq., of Guilford, Henry Butman, Esq., of Dixmont, Samuel Stetson, Esq., of Stetson, George W. Chamberlain, Esq., of Carmel, as vice Presidents, and Albert Emerson, and Geo. A. Thatcher as Secretaries.

Moses L. Appleton, Gorham L. Boynton, John S. Sayward, Levi Johnson, and Thomas A. Hill were appointed a committee to draft and report resolutions.

After some introductory remarks by the President the committee reported the following resolutions which were read by the chairman, Moses L. Appleton, Esq., and unanimously adopted:

Resolved, That the true interests of the Eastern portion of our state demands that a railway communication should be extended from the Kennebec to the Penobscot river.

Resolved, That the city of Bangor is especially interested in the immediate construction of a road which will promote her welfare, increase her business, and add to her growth and population.

Resolved, That in the accomplishment of this great enterprise, we must look to the efforts of the Farmer, the Mechanic, the Merchant, the lumbering man, and we invoke each and all of our citizens who regard the onward prosperity of Bangor, to use every exertion to secure the immediate organization of the Penobscot and Kennebec railroad company.

Resolved, That a responsible duty devolves on our citizens to work unceasingly, to promote the desired object, and by a liberal subscription, manifest to persons residing elsewhere, the confidence they have in this great enterprise.

Resolved, That the sentiment of our people, as expressed in a resolution passed at a public meeting on the 11th day of February, 1847, remains unchanged, and in the opinion of this meeting as well as that "the construction of a railroad having been secured to Waterville, the interests of Bangor and the east require its immediate extension to this city."

Resolved, That true policy dictates the location of the road in such a manner as will connect us with the interior towns, and open our business and market to their rich and varied products.

Massachusetts.

Fitchburg Railroad.—At the annual meeting of the company yesterday, the old board of directors, viz:—Messrs. Jacob Foster, Henry Timmins, N. F. Cunningham, E. Hasket Derby, Horatio Adams, Alvah Crocker, and Israel Longley, were chosen by nearly a unanimous vote. Some conversation was

had during the sitting with regard to the business which was to come upon the road hereafter, when Mr. Alvah Crocker gave a statement of his labors in endeavoring to raise subscriptions for the stock of the Boston and Troy railroad, which we take from the Journal:—

The amount required to be raised previous to any assessment being laid, (\$400,000) was completed a week ago last Friday night, and that portion of this great trunk might now be considered as fairly launched. Efforts were also making by the directors of the Troy and Greenfield road to infuse new life into the prosecution of their road, and as soon as one section of the latter is contracted for, the former will all be put under contract.

When this line shall have been completed, the passage from Boston to Troy, Mr. Crocker said, can be made in six hours. A man could breakfast in Boston, dine in Troy, and sup in Buffalo; and a 25-ton locomotive would draw a load of 3000 barrels of flour over the road with the same facility which on the other route it would draw 1000 barrels.

After alluding to the great advantages to the trade and commerce of Boston, which this avenue would secure, Mr. Crocker spoke of the greatest difficulty in the prosecution of the work, viz—the tunnel through the mountain between North Adams and Greenfield. The estimated cost of this part of the work is two millions of dollars, and allowing that but 125,000 passengers and 125,000 tons of freight passed through it a year, Mr. Crocker thought it would be a paying investment.

The leading business men and financiers of Troy had assured him that four times that amount of business might with safety be calculated upon. He was ready if the various companies whose roads would be benefitted by the construction of this tunnel would agree among themselves on a fair tariff of tolls and would then lease the tunnel to a company, to go out into the community and solicit subscriptions for its construction.

The meeting was large, and the best feeling seemed to prevail among the stockholders in relation to the prosperous condition of the road.

Pork Packing in the West.

The Cincinnati Gazette of the 19th inst. has the following item:

Hogs slaughtered and cut at Cincinnati and vicinity this season, according to present figures.....	380,555
At Louisville.....	184,000
At Chillicothe.....	32,000
At Hamilton, according to the Intelligencer.....	15,000
At Evansville, Ia.....	12,830
At Lafayette.....	40,000
At Terre Haute.....	65,500
At Vincennes.....	15,000
At Clinton.....	14,000
At other points in the Wabash Valley, (Attica, 8000, Williamsport, 6000, Covington, 3500, Perrysville, 5000, Eugene 7000, Newport, 3800, Logansport, 5000, Delphi, 5000,).....	43,300

The Gazette goes on to say—

These figures for the Wabash valley, strike us as high. They are given by the Lafayette Journal of 14th inst., which states that nearly all the particulars were "gathered from the most reliable sources." If correct, they show a large increase in the amount of pork packed in the Wabash valley this season, as compared with last.

The Hamilton Intelligencer says that the figures given for that place this season, must be set against 32,000 head for last season. This shows the large falling off of 17,000.

A note from New Lisbon, Columbiana county to the Cincinnati Price Current, says: "The number of hogs packed in this county, this season, was 8,160 head, weighing 1,632,000 pounds against 7,860 head last season, which weighed 1,838,000 pounds. You perceive, the number of hogs is greater this season than last, yet there is a deficiency in the weight of 206,000 pounds."

Aggregate deficiencies have been summed up, at seven or eight places, of about 80,000 head, but they rest more upon estimates than actual returns, and therefore should not be too strongly relied upon.

AMERICAN RAILROAD JOURNAL.

Saturday, February 2, 1856.

Virginia.

Breaking Ground on the Virginia and Tennessee Railroad.

The ceremony of breaking ground on the Virginia and Tennessee railroad took place at Lynchburg on the 16th ult. in a style worthy of the importance of the event. Among those present were many of the most distinguished friends and advocates of internal improvement in that State, including Gov. Floyd, upon whom, by virtue of his official station, but more by virtue of his liberal and statesmanlike views, and his untiring devotion to the great interests of Virginia, it appropriately devolved to strike the first blow in a work, the commencement of which is justly regarded as a new era in the history of Virginia. The ceremonies of the day were commenced with an eloquent invocation of the blessings of the Almighty upon the enterprise, by the Rev. John Early, well known as one of the first and most efficient advocates of the work. The orator of the day, Joseph K. Irving, Esq., then delivered an able and eloquent address, of about half an hour's length, concluding with a graceful allusion to Gov. Floyd. Gen. Clay, the President, and C. F. M. Garnett, Esq., Engineer in chief of the company, then made brief addresses—which our position did not enable us to hear—to the Governor, who responded in a speech of great beauty and power. Having concluded, Governor Floyd, taking the spade presented by Gen. Clay, proceeded to throw up the earth. The spade was used in succession by the President, Engineer and Directors of the company, Mr. Tunstall, the President, Capt. Talcott, Engineer, and Mr. Gifford, one of the Directors of the Richmond and Danville railroad company, and many others.

After giving in the field an earnest of what the future is to accomplish, the company repaired to a magnificent entertainment served up at the Union Hotel. Among the invited guests from a distance were His Excellency, Gov. Floyd, Mr. Senator Woods, of the Franklin district, W. P. Tunstall, president, Capt. Talcott, chief engineer, and Mr. Gifford, a director, of the Richmond and Danville Railroad company, Mr. Cook, of Grayson, and Mr. H. L. Brooke, of Richmond.

Judge Wilson presided at the supper. In answer to toasts, or in compliance with direct calls made upon them, the company was addressed by Governor Floyd, and by Messrs. Tunstall, J. K. Irving, Clay, Deane, Cralle, Gifford, Talcott, Garnett and R. J. Davis.

A large number of answers from persons invited to be present, chiefly from the most distinguished citizens of Virginia and Tennessee, all breathing a similar spirit, were read to the assemblage. We think that is the most important event of the kind which has ever yet taken place in Virginia. It is the commencement of what must always continue to be one of the great lines of railway in this, and consequently one of the greatest in any country.—If wisely and properly managed, it must in a commercial and material point of view exceed in importance that of the James River and Kanawha canal. But it will do what this canal never has done, and what no canal is capable of doing, it will give a mighty impulse to the public mind and to the industry of the State, and it will be the pioneer of a new order of ideas, and the parent of a great family of similar and useful works. A canal may be a useful agent for the transportation of the coarsest

kind of luggage, but the only influence it exerts are to be found in its material results. It belongs to the past and has no sympathy with modern ideas. The rail is the great agent of social life—the great instrument of social intercourse which is the necessary condition of all civilization. The influence of a canal ceases when it delivers the barrel of flour it undertakes to carry. In estimating the influence of a railroad this only function of the canal is hardly taken into account. It serves equally well, and better, the material wants of man, and in addition it gives the highest condition of social enjoyment and intellectual progress. This is the true reason why we witness so marked a difference in the results that follow the construction of the two kinds of works. The opening of a canal may stimulate the growth of towns, by the increased facilities it gives to business, but none are attracted to it except as a mere instrument of transportation. But every person wishes to get within reach of a railroad, because he feels himself in reach of everything connected with it. It brings him into the world, in immediate connection with all that is best worth seeing and hearing, which he may visit and enjoy at will.

Such are some, and we may say the main causes of the influence of railways in stimulating the growth of the country they traverse, and their superiority over canals. We ask the people of Virginia whether, if the same amount expended in that state upon the James River and Kanawha canal, had been expended upon railroads running in a similar direction, Richmond, Lynchburg, and all the towns on its line, and the country traversed by it, would not present to us a very different aspect from what they now do? Whenever the business of a section justifies the construction of a canal, you will always find, sooner or later, a railroad alongside of the tow-path. The building the canal first involves the construction of both; but whoever heard of a canal being built to rival a railroad?

How can Brooklyn be Supplied with Water?

Among the various projects to effect the above object, we would recommend to the consideration of those entrusted with this important duty, the articles which have appeared in the two last numbers of our paper, relative to obtaining a supply of water for that city from Long Island. To our mind they point out the only mode by which the proper evidence can be obtained to serve as the basis of future action. We are satisfied that the project of supplying Brooklyn with Croton water will not be entertained till all other sources shall be found to be inadequate; and the sooner the preliminary steps indicated in these articles are taken, the sooner will those interested be in a condition for definite and immediate action.

The methods proposed, though somewhat novel in its character in this country, are in perfect accordance with natural laws. In various places in Europe works have been constructed based upon the same principles, which in fact is the case with Artesian wells. Mr. Hewson, the writer of the above articles, has had the opportunity of a widely extended experience in water works in England and Ireland, and his opinion is entitled to the most respectful consideration, independent of the argument upon which his conclusions are based.

California Gold--U. S. Mint.

The Philadelphia North American has the following authentic statement respecting the amount of gold dust from California received in the United States, and forwarded to the mint for coinage. It is derived from official sources:

The first California gold sent to the U. S. Mint was in December, 1848, and was forwarded by Mr. Carter, of Boston. In the same month of the same year, Gov. Marcy, the then Secretary of War, sent a small amount to the Mint, which had been forwarded to our Government by Gen. Mason, of California, who had received the same at San Francisco for duties. The whole amount produced only \$44,177 of coined money. The following table will show the deposits of gold at the Mint of the United States, Philadelphia, and at the Branch at New Orleans, from the first receipts in December, 1848, up to the present time, a period of about 14 months:

At the U.S. Mint, Philadelphia, in 1848.	\$44,177
Do. do. 1849.	5,481,439
Do. part of January, 1850.	850,000
Total at U.S. Mint, Philadelphia . . .	\$6,375,616
To which add:	
At the Branch mint, N. Orleans, in 1849 . .	\$666,080
Do. part of January, 1850 . .	50,000
	\$716,080

Recapitulation.

Total deposits of California Gold at the U.S. Mint, Philadelphia	\$6,375,616
Total deposits of California gold at the Branch Mint, New Orleans	716,080

Grand total \$7,091,696

If the deposits of the present month are any guide in forming an estimate for the balance of the year, the deposits of California gold at all the United States Mints, during the present year, will exceed ten millions of dollars.

The coinage at the U.S. Mint, Philadelphia, during the year 1849, was as follows:

	Pieces.	Value.
Gold Eagles	653,618	\$6,536,180
Half do	133,070	665,350
Quarter do	23,294	58,235
Gold Dollars	688,567	688,567
Silver do	62,600	62,600
Silver Halves	1,252,000	626,000
Silver quarters	340,000	85,000
Dimes	839,000	83,900
Half Dimes	1,309,000	65,450
Copper Cents	4,178,500	41,785
Half Cents	39,864	199

Recapitulation.

Gold	1,498,543	\$7,948,332
Silver	3,802,600	922,950
Copper	4,218,364	41,994
Total	9,519,513	\$8,913,266

A still further delay will be experienced in the issue of the double eagle, in consequence of the imperfection of the die. Notwithstanding the clamor for gold dollars, and the heavy coinage to meet the supposed want, there is very little demand for them at the mint.

Railroads in want of a competent superintendent to take charge of their affairs, are referred to the advertisement in another column of Mr. Stevens, the present superintendent of the Providence and Worcester railroad.

English Railways.

Our readers will find an exceedingly interesting table in our present number of the working of English railways for the past eight years. The table was prepared with great care, and we vouch for the accuracy with which it has been copied.

New York and Erie Railroad.

The receipts of the Erie railroad for the month of January, 1850, were as follows:

From Passengers and Mails	\$46,752 50
From Freights	66,202 75
Total	\$112,955 99
The receipts for January, 1849, were	\$90,340 99

Statistics of Traffic Returns of Railways in the United Kingdom.

For Eight Years Ending 29th December, 1849.

Compiled by Mr. J. T. HACKETT, for "Herapath's Journal."

	Total Receipts.								Average Traffic per mile per week.								Miles of Railway over which Traffic was carried.				
	1849.	1848.	1847.	1846.	1845.	1844.	1843.	1842.	1849	1848	1847	1846	1845	'44	'43	'42	1849	1848	1847	1846	1845
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£					
January.. 6	109,854	151,112	138,670	119,945	99,513	78,567	70,419	58,878	38	43	51	57	56	49	46	52	4477	3456	2700	2090	1780
January... 13	168,987	151,727	132,411	116,084	94,569	80,855	69,052	60,890	38	44	49	55	53	51	46	51	4477	3456	2700	2090	1780
January... 20	174,807	150,069	136,884	115,181	97,619	80,992	72,506	64,673	39	43	50	55	55	51	48	51	4477	3456	2700	2090	1780
January... 27	172,613	149,910	136,388	115,793	98,346	81,978	74,134	63,974	39	43	49	55	55	52	49	52	4477	3476	2724	2090	1780
February... 3	176,890	152,493	143,132	117,818	97,771	83,746	76,079	69,315	40	44	52	56	54	52	49	55	4477	3483	2724	2090	1805
February... 10	179,016	151,246	137,675	119,170	99,652	81,007	71,208	57,560	40	43	50	57	55	51	47	51	4477	3483	2724	2090	1805
February... 17	179,606	151,563	124,384	118,654	94,518	82,644	69,231	63,539	40	43	45	57	52	51	45	51	4477	3483	2724	2090	1805
February... 24	177,432	153,187	126,879	119,513	96,319	78,246	69,499	66,939	39	42	46	66	53	48	46	52	4534	3599	2777	2110	1805
March... 3	181,525	160,365	138,965	123,128	98,030	80,391	73,348	68,702	40	44	50	58	54	50	48	51	4535	3608	2777	2110	1805
March... 10	185,623	160,267	140,004	121,920	97,437	82,733	75,030	70,194	41	44	50	58	54	51	49	51	4543	3619	2805	2110	1805
March... 17	184,897	162,600	139,095	126,291	100,661	80,581	76,582	72,857	40	45	49	60	56	50	53	4549	3622	2805	2110	1812	
March... 24	187,001	162,435	143,870	123,941	103,235	85,033	78,547	75,993	41	44	51	58	57	53	52	4580	3664	2839	2116	1812	
March... 31	191,985	170,296	146,477	126,234	110,212	92,652	80,138	78,874	42	46	51	60	61	58	51	4583	3664	2839	2110	1812	
1st Quarter.	2,330,236	2,027,270	1,783,834	1,563,672	1,287,882	1,069,425	955,823	871,888	517	568	643	752	715	668	626	682					
April... 7	202,569	176,776	156,609	132,091	117,190	100,220	87,041	84,004	44	48	54	60	65	62	50	61	4583	3664	2891	2120	1812
April... 14	204,421	173,760	160,482	136,210	116,687	103,051	89,840	81,875	45	47	55	62	64	64	57	59	4585	3664	2891	2120	1815
April... 21	203,766	178,711	166,186	143,261	117,085	105,321	91,659	81,441	44	48	57	66	64	65	59	59	4585	3664	2929	2160	1815
April... 28	203,218	189,000	162,881	144,650	120,515	106,462	98,630	84,392	44	51	55	67	66	64	63	61	4585	3666	2929	2160	1815
May... 5	210,581	199,315	166,807	139,977	123,622	105,667	95,356	87,176	46	54	57	64	68	65	61	63	4585	3669	2929	2202	1815
May... 12	204,591	193,820	167,194	146,296	129,395	102,490	93,611	89,707	44	52	56	66	71	62	59	65	4626	3692	2990	2202	1815
May... 19	202,250	192,250	169,318	144,618	120,194	103,316	91,526	89,502	43	51	57	65	83	62	58	67	4644	3756	2990	2202	1815
May... 26	222,170	197,200	179,010	142,335	132,031	111,982	89,976	97,666	48	52	60	64	72	67	57	72	4675	3756	2990	2202	1815
June... 2	236,700	191,643	193,321	154,053	127,760	120,926	99,534	80,232	50	50	64	70	70	72	63	63	4698	3796	2990	2202	1815
June... 9	223,330	198,936	181,882	171,643	129,768	116,446	99,411	91,150	48	52	60	78	71	69	69	63	4696	3796	3031	2202	1815
June... 16	220,200	218,156	166,678	154,935	140,690	114,829	102,688	92,765	47	57	55	69	77	68	65	65	4711	3804	3031	2232	1825
June... 23	226,482	208,540	177,027	155,768	142,893	118,977	103,364	81,773	48	54	55	70	78	70	66	63	4711	3876	3189	2232	1825
June... 30	232,314	208,235	184,574	156,341	137,800	118,226	103,379	92,427	49	54	58	70	71	69	65	64	4711	3876	3189	2232	1834
2d Quarter.	2,792,602	2,526,342	2,231,909	1,922,178	1,684,630	1,425,113	1,245,965	1,134,110	600	670	743	871	920	849	792	825					
July... 7	229,066	206,211	189,192	162,301	140,336	118,843	107,755	84,217	49	53	59	68	76	70	68	63	4755	3899	3202	2371	1834
July... 14	240,315	224,103	189,623	161,177	144,312	124,888	112,345	103,542	50	57	59	67	76	69	71	71	4782	3925	3202	2371	1830
July... 21	243,539	222,326	195,407	173,216	154,134	130,807	112,704	100,081	51	56	61	72	80	73	71	70	4782	3963	3202	2371	1935
July... 28	241,557	234,296	201,707	173,341	158,609	140,551	111,164	101,708	50	58	63	72	80	78	70	71	4804	3986	3202	2402	1935
August... 4	262,573	237,899	212,514	177,358	158,735	139,050	112,859	109,440	54	59	66	73	81	77	71	77	4829	4009	3202	2402	1954
August... 11	259,300	222,814	216,276	177,635	162,433	142,059	116,944	103,001	53	56	67	73	80	79	74	72	4884	3980	3202	2441	1969
August... 18	249,070	225,916	210,027	174,237	152,684	133,120	112,617	94,131	51	56	65	71	80	74	71	69	4889	3984	3242	2441	1969
August... 25	245,571	222,104	213,755	177,359	155,286	135,096	111,235	90,590	50	55	66	73	76	75	70	66	4889	3984	3242	2441	2033
Sept... 1	245,884	227,050	207,888	175,808	149,441	137,954	110,685	96,247	50	56	63	72	73	76	70	75	4889	4057	3300	2441	2033
Sept... 8	240,691	237,241	212,143	181,823	153,428	134,436	108,693	95,351	49	57	64	74	77	76	68	67	4928	4116	3300	2441	2033
Sept... 15	233,855	233,100	209,571	180,352	153,288	128,658	112,132	103,403	47	56	62	72	75	73	71	69	4966	4145	3375	2498	2033
Sept... 22	230,000	233,050	207,634	183,962	153,079	128,165	109,717	95,528	46	56	61	73	75	72	69	64	4966	4145	3375	2498	2033
Sept... 29	230,910	220,956	204,462	174,146	149,040	131,176	109,745	96,778	46	52	60	73	73	74	68	65	4983	4178	3375	2498	2033
3d Quarter.	3,152,841	2,947,066	2,670,139	2,272,745	1,987,805	1,720,905	1,448,695	1,274,017	640	727	816	934	1002	966	913	896					
October... 6	223,973	221,196	210,609	175,612	145,276	128,364	106,610	96,179	45	52	62	70	71	72	67	65	4997	4218	3375	2513	2033
October... 13	233,907	222,013	199,393	167,374	145,651	128,135	108,192	94,740	47	52	58	66	71	72	68	64	5002	4271	3399	2541	2038
October... 20	229,017	211,547	194,773	163,655	148,509	118,533	103,942	90,379	46	49	57	64	73	66	60	60	5015	4270	3399	2541	2038
October... 27	221,746	201,925	188,057	155,350	143,530	113,977	98,459	84,217	44	47	55	60	70	64	62	56	5011	4318	3399	2574	2038
Nov... 3	217,524	197,657	180,805	154,692	142,946	109,047	93,903	86,776	43	45	53	60	70	61	56	57	5022	4318	3399	2574	2038
Nov... 10	209,667	190,401	175,406	150,642	132,023	101,408	86,949	77,861	42	44	51	58	65	57	55	51	5055	4318	3399	2588	2038
Nov... 17	198,651	185,876	164,947	142,611	124,962	99,042	84,640	76,827	39	43	48	55	61	56	52	51	5129				

to \$1,000,000; in 1848, to \$1,053,335; and, in 1849, the increase over the preceding year amounted to \$954,811.

The average traffic receipts per mile per annum were as follows:—For 1842, \$3,118; for 1843, \$3,086; for 1844, \$3,278; for 1845, \$3,469; for 1846, \$3,305; for 1847, \$2,870; for 1848, \$2,556; and for 1849, \$2,302.

The amount of capital expended on the railways referred to in the table up to July in 1842, was \$52,390,100; in 1843, \$57,635,100; in 1844, \$63,489,100; in 1845, \$71,646,100; in 1846, \$83,165,100; in 1847, \$109,528,000; in 1848, \$148,200,000; and in 1849, to \$181,000,000.

The average cost of the railways per mile in operation would appear to be, in 1842, \$34,690; in 1843, \$36,360; in 1844, \$35,070; in 1845, \$35,070; in 1846, \$31,860; in 1847, \$31,700; in 1848, \$34,234; and in 1849, \$35,214. The increase in the average cost per mile is the worst feature in railway statistics, because it shows that the continual additions to the capital accounts of the old and completed lines, far outweigh all the professed advantages of constructing thousands of miles of new lines and branches, at considerably less cost than the average expenditure per mile on the old trunk lines. This serious evil must be remedied by closing the capital accounts of every railway, at farthest, within three years after the opening of the great main lines, and as much sooner as possible, otherwise there can be no foundation for confidence in railway property or railway management.

Railroad Iron.

2,000 Tons Heavy Rails, 57 and 61 lbs. per lineal yard, in store, and to arrive, within 30 days.

500 Tons 2½ x ½ inch flat Rails.
1000 Tons 56 lbs. per lineal yard.
For sale by DAVIS, BROOKS & CO.,
No. 68 Broad street.

February 2, 1850.

3,000 Tons Railroad Iron.

THE UNDERSIGNED IS PREPARED TO contract for the delivery of the above quantity at any port of the United States. Can be made of any required pattern and of a favorite brand.

CHARLES ILLIUS,
Im3 20 Beaver St., New York.

Great American Mechanical Work.

D. APPLETON & CO. PUBLISH This Week, No. 2, with numerous illustrations, price 25 cts. A DICTIONARY OF MACHINES, MECHANICS, ENGINE WORK AND ENGINEERING; designed for practical working men, and those intended for the engineering profession. Edited by Oliver Byrne. To be completed in about 40 Nos. Price 25 cents each.

This will be the most practical, as well as the most perfect work ever published on Machines, Mechanics, Engine work and Engineering. The Mechanic, Engineer or Machinist, from the time he commences his profession till he arrives at the zenith of the most successful professional career, will find this an indispensable work of reference.

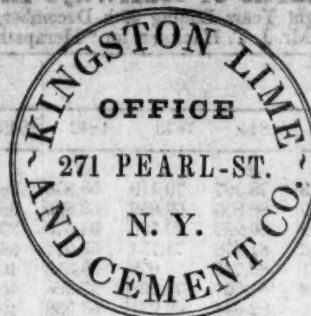
This volume will be of royal 8vo. size, containing nearly 2,000 pages, 1500 plates, and 6,000 cuts; it will fill up a chasm that has long been a requirement to practical working men, and those intended for the engineering profession. It will present Working Drawings and descriptions of every important machine in practical use in the United States, and independent of its American value as embracing the results of American ingenuity, it will contain a complete treatise on Mechanics, Machinery, Engine work, and the substance of at least a thousand dollars worth of books scattered in expensive folio volumes or magazines.

Heads of Subjects and Illustrations Comprised in this No.—Archimedian Screw Propeller, Artesian Well of Grenelle, Augers, Auger Machine, Automatic Diving Machine, Axles, Belting Machine, Belting, Biram's Tell Tale, Blasting under Water, Blast Furnaces, Blasting, Block Machinery, Blocks, etc.
No. 3 will be published next week, containing 176 plates.

AGENTS WANTED.

Several responsible and active men are wanted as Agents to procure subscribers for the above valuable work. Subscribers may readily be obtained in every city and village of the American continent. A liberal commission allowed. Apply to the Publishers, 200 Broadway.

Hydraulic Cement.



HYDRAULIC CEMENT, OF BEST QUALITY, manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.
ISAAC FRYER, Sec'y.
January 19, 1850. ly

BALL & CO'S PATENT Indestructible Water Pipe.

We publish below the opinions of others who have a personal knowledge of our Pipe, and would request all persons interested in the conveyance of water to investigate its merits for themselves. It being cheaper than Cast Iron pipes, and incomparably more durable (as there is no chance to commence decay but continually grows more permanent) it must supersede it altogether in works requiring durability and purity.—Branching, taping, altering or relaying, is done with the greatest facility, and certainty, without injury, in any size of bore from 3 feet diameter down to ½ inch of an inch under any head that can be controlled with hose or service pipes.
J. BALL & CO.
Corner of Read and Centre Sts., N. Y.

FOR the benefit of those who have requested information in regard to this excellent article, we insert the following testimonials in relation to its merits: "In answer to the numerous inquiries in relation to J. Ball & Co's Indestructible Water pipe, composed of iron and cement and in use in our village, the undersigned, water commissioners, trustees, and late trustees of the village of Saratoga Springs, take this method of saying that we have perfect confidence in the utility, goodness and durability of said pipe. The village of Saratoga Springs has some 20,000 feet of this pipe, varying from 6½ to 14 in. in diameter, under a head of about 80 feet. It has been laid since the fall of 1846. Since it was fully completed, it has cost comparatively nothing to keep it in repair; and, although some portions are exposed to the frost, it seems to stand well the test, and answer all the purposes for which it was designed and constructed. We believe it preferable to iron pipe—is much cheaper and more durable, and we would not exchange it for any other kind of pipe yet invented, if we could without any additional expense or inconvenience. The water comes through clear and pure, and where we have had occasion to take any part of it up to improve or alter the grounds, it appeared to be just as sound and imperishable as the moment it was laid down. This testimony is entirely disinterested, and is now given to avoid the necessity of answering the many calls upon us for information on this subject. We have witnessed and many of us have superintended the laying down of the pipe in this village, and watched its operations since, and are perfectly satisfied that we have the best water pipe ever presented to the public. Saratoga Springs, Dec., '49.

G. M. Davidson,	Water Com.
N. Putnam,	
N. B. Doe,	
R. Gardner,	Trustees.
H. P. Hyde,	
J. L. Perry,	
J. D. Briggs,	Late Trustees.
S. Chapman,	
J. A. Corey,	
W. S. Alger,	
Wm. Cook,	

"I certify that I was Chief Engineer, having the construction of the above work in charge, and fully concur in the foregoing statement. Dec., 1849.

"S. R. OSTRANDER, Civil Engineer."
A card, signed by the Trustees or Water Commissioners of Saratoga Spa (village), expressing their unqualified approval of J. Ball & Co's indestructible water pipe, has been shown me; whilst I fully endorse from my own experience, the statements of these gentlemen.

I am enabled to add that under my direction, some six thousand feet of cement pipe was laid by Messrs. Ball & Co., in this village, that the main pipe was of 10, 4 and 6 inches bore, and is subjected to a pressure due to an average head of sixty-five feet—it has fully answered my expectations. I would further state that, having been employed by the Common Council of Albany to report a plan of supplying that city with water, I had occasion very carefully to test the merits of this kind of pipe, and was so fully convinced of the practicability of using the cement pipe for large conduits, being of three feet in diameter, as well as for smaller ones, that I recommended its adoption in the proposed work, and give my reasons for so doing.

1st. That the cement pipe is far less expensive than that of cast iron or brick.

2d. That it will sustain an equal pressure with that of cast iron; and when used for large conduits, can be carried up and down the inequalities of the surface of the ground, saving the grading, which is indispensable if a brick one is used.

3d. That it can be readily and economically repaired, and, should it become necessary, can be taken up and relaid without injuring the pipe.

4th. That this description of pipe is not so much affected by frost as one of metal, and in no way impairs the quality of the water. F. S. CLAXTON,
Engineer and Ag't Cohoes Co.

Messrs. J. Ball & Co., New York.
Cohoes, December 31, 1849.

In addition to the above testimonials, we can state that, having had experience and personal knowledge in regard to the excellent qualities and durability of the above pipe, we have no hesitation in recommending it to the public.

Starr & Alburts, 122 Nassau st.
Frederick Marquand, per H. G. M., Atty.
Janes, Beebe & Co.
H. W. Metcalf, 63 and 65 Centre st.
Norman White, 111 Fulton st.
John J. Merritt, No. 76 Columbia st. Brooklyn.
Platt & Brother, 20 Maiden Lane.
Geo. Griswold, South st.
J. & J. W. Meeks, 14, 16 and 18 Vesey st.
Wm. Gale, 116 Fulton st.
J. C. Brown, Builder, 10 Dutch st.
Wm. Colgate & Co.
Thos. C. Smith.
O. R. Burnham, 17 and 19 Broadway.
G. B. Hartson, 58 and 60 Vesey st.
Wm. W. Campbell, 77 St. Mark's Place.
Lorin Brooks, 240 Broadway.

Messrs. J. Ball & Co.:
Gents.: Articles have appeared in the Farmer and Mechanic, from Saratoga and Cohoes, on the subject of your water pipes; I fully endorse their opinions. Your work for my son's water cure at South Orange, embracing a large amount of four and three inch pipe, under a head at least as great as the Croton of New York, shows not only certainty and efficiency, but what is equally important, perfect purity, which for medical purposes is all important, and should be considered so for drinking and other uses.

Yours, SAML. MEEKER.

Newark, January 11, 1850.

In addition to the above, we certify that J. Ball & Co. have inserted pipes for us of 10 inch bore and less, since the winter of 1844, and that last Spring we had over 1000 lbs. of lead pipe removed, and its place supplied with their pipe. We fully endorse the opinions expressed in the notices above.

BEACH, BROTHERS,
New York Sun Establishment.

Having for the past three years laid many of Messrs J. Ball & Co's patent cement pipes in the Newark Aqueduct Co., I prefer them to any pipe that I have used; their cost being one-third less than iron pipe, and also being free from wear and rust, and can most cordially recommend them for all aqueduct purposes.

SHELDON SMITH, Superintendent.
Newark, January 14, 1850.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

NOTICE TO

Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York.

NOTICE.

TO BRIDGE BUILDERS, BRIDGE COMPANIES, and Other Individuals and Associations, who have constructed or used Bridges involving the combined principle of *Bracing, Counter-bracing and Trussing* by means of counteracting braces, keys, wedges, screws, etc., as set forth and explained in my Bridge Patent of 1830, in the words following, to wit: "A system of Counter-bracing, by means of which the truss frames are rendered stiff and unyielding, and the bridge kept in uniform action whether loaded or unloaded"—NOTICE is hereby given, that in all cases in which said combined principle has been introduced into bridges, without due license or authority from me, and without my having been duly remunerated therefor, will be regarded as infringements upon my rights and privileges, and that an amicable adjustment and settlement of all my claims in the premises may be effected by prompt application to my duly authorized Agents therefor, viz: Messrs. Clinton, Knight and Brother, of Cincinnati, Ohio, or Daniel A. Webster, Esq., 8 Pell street of the city of New York.

STEPHEN H. LONG, Patentee.

Louisville, December 10, 1849

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849.

au7tf

M. M. White, Agent,
No. 74 Broadway, New York.

Engineering.

A GENTLEMAN OF TWENTY YEARS' EXPERIENCE in all branches of Engineering, Steam Engine and Steam Ship Building, Surveying, etc., during which time he has been engaged in special service of great trust by a foreign government, wishes occupation in his profession. Apply to
HILGER & CO., 19 Platt st., N. Y.

Great American Mechanical Work.

PUBLISHING MONTHLY BY SUBSCRIPTION

SPECIMENS OF THE STONE, IRON, AND WOOD BRIDGES, VIADUCTS, TUNNELS, CULVERTS, &c., of the United States Railroads, illustrated by a Series of Drawings, from actual measurement of the works, including Plans, Elevations, Sections and details of each Structure, accompanied by remarks on the relative merits of the various forms of construction adopted, as regards economy, strength and durability, with Specifications, Estimates, Bills of Timber, Iron, etc., of the several structures: and an APPENDIX, illustrative of the art of Bridge Building as at present practised in Europe; and numerous original Designs for Bridges, Viaducts, Culverts, etc.; the whole calculated to meet the exigencies of Engineers, and assist Draftsmen, Bridge Builders, Mechanics and Students.

BY GEORGE DUGGAN,
ARCHITECT AND CIVIL ENGINEER.

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The First or American Division of this important work will be completed in about Twelve Parts, and the APPENDIX in about Eight Parts, each part containing Two double or Four single large folio plates, accompanied by appropriate letter press descriptions, Specifications, Estimates of the cost, Bills of Timber, Iron, &c. of each structure, presenting at a glance the comparative merits, as regards economy, strength, and durability of the various modes of Bridge construction at present practised by the most eminent Engineers in the United States.

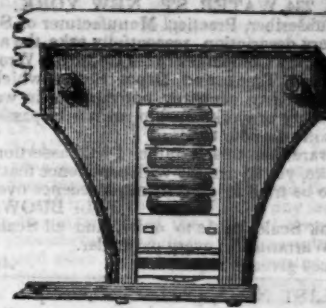
The Engraving has been entrusted to first rate artists, and is executing in a manner that cannot fail to give satisfaction, while the price (Seventy-five cents a Month) is such as will place it within the reach of all who take an interest in our great mechanical contrivances.

It shall be optional with Subscribers to take the First Division of the work only, but the APPENDIX cannot be supplied to those who do not subscribe for the First Division.

N. B.—Members of the profession, and others wishing to become subscribers, are requested to send their names without delay to the author, as below, as the publication of the names of Subscribers in one of the early Parts has been determined on, and no more copies of the work will be printed than are found necessary to supply Subscribers. Parties remitting \$9, the cost of First or AMERICAN DIVISION of the work, shall receive it monthly as published, POST FREE, in any part of the United States.

Engineers in charge of Railroad Works, are respectfully requested to send Tracings of their Drawings of Bridges, &c., with the Specifications, Bills of Timber, Iron, &c., to GEORGE DUGGAN at his residence No. 179 Henry Street, New York, with a view to their insertion in this work.

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them. Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability. Action is in progress for an Infringement on Fuller's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours."
JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

"I do not hesitate to allow you to say that I concur in Mr. M'RAE's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M'RAE had seen your springs (as I believe) and entertain it still."
WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

Office of Sup't Norwich & Worcester R.R. Co. }
December 26, 1849. }

"I most fully concur in the opinion of Jno. McRAE, Engineer of S. Carolina Railroad, that 'Rays Springs are inferior to Fuller's Springs,' and shall with pleasure recommend them to all Railroad Companies for adoption. I have used both springs on this road and have no hesitation in saying that I should in all cases prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,
Supt and Engineer.

Office B. & P. R. R. Co., }
Boston, 20th December, 1849. }

"This company have cars fitted up with both Ray's and Fuller's 'Metallic India Rubber Springs,' and I do not hesitate to say that Fuller's arrangement is very much superior to Ray's."

W. RAYMOND LEE, Supt.

The following result has been obtained by experiment upon one railroad.

A set of Trucks fitted with Steel Springs cost \$190-77 and weigh 2355 lbs. The same with Fuller's Springs, 131-71 " 1911 lbs.

Difference, \$59-06 " 444 lbs.

Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

G. M. KNEVITT, 33 Broadway, N. Y.

General Agent for the U. S.

The Springs can also be had of
JAMES LEE & CO., 13 India Wharf, Boston, &
JAS. THORNLEY, 110 Chestnut St., Philad.
January 2, 1850.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad.

Portland, Me.

November 10, 1849.

**Brown's Old Established
SCALE WARE HOUSE,**

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others.

J. L. BROWN.

Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required.

4tf

LIST NO. 1, [To be Continued.]

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JOHN WILEY, 161 BROADWAY NEW YORK, has on hand and for sale the following Works on the above subjects:

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TREDGOLD, (T.) The Steam Engine, its Invention and Progressive Improvement, an Investigation of its Principles and its Application to Navigation, Manufactures and Railways, a new and revised edition with considerable additions, including enlarged Examples of Locomotive Engines for Railways, Marine Engines for Sea, River and Canal service, with the Construction of Steam Vessels, Stationary Engines employed for all kinds of Manufacturing purposes, Engines employed in Mines for Raising Water, or for supplying Towns with Water, Cornish Pumping Engine, Engines for Mill Work, Flour Mills, etc., High Pressure and Non-condensing Engines, issued Monthly, 15 parts are published at 75 cents each.

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BRIDGES, The Theory, Practice and Architecture of Bridges of Stone, Iron, Timber and Wire, 3 vols. royal, 8mo, half Morocco, 138 Engravings and 92 Wood cuts, \$25 00.

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AMERICAN LOCOMOTIVES, being a Treatise on the Theory of Steam, and its Application to Locomotive Engines, illustrated by 42 Elegant and Accurate Engravings of the most approved American Locomotives, and accompanied by full and clear explanations, designed for the use of Students, Builders and Working Engineers, by Emil Renter. The work will be completed in 16 monthly numbers, 5 numbers are now published, at 75 cts. each number. For sale by

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Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,

Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston.

Prichard, M. B.,

East Tennessee and Georgia R. R., Cleveland, Tenn.

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roebeling, John A.,

Trenton, N. J.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,

Dauphin and Susquehanna Coal Co., Dauphin, Pa.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

Wormeley, Preble,

Central Ohio Railroad, Zanesville, Ohio.

HOTELS.**JONES' HOTEL,**NO. 152 CHESTNUT STREET,
PHILADELPHIA.

BRIDGES & WEST, Proprietors.

DUNLAP'S HOTEL,On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.**BUSINESS CARDS.****VanRensselaer Stevens,**Supt. Providence & Worcester R.R., Providence, R.I.
Has had 13 years' Experience in Operating Railroads.
Will go South or West if applied to.**J. & Riley Carr,**

Manufacturers of Cast, Shear, German and Blister

STEEL,

Of all Descriptions, Warranted Good.

BAILEY-LANE WORKS, SHEFFIELD.

R. S. DENTON, Agent,

NO. 20 CLIFF ST., NEW YORK.

STEEL AND FILES.**R. S. Denton,**

20 CLIFF STREET, NEW YORK,

AGENT FOR

J. & Riley Carr'sBAILEY-LANE WORKS, SHEFFIELD,
Manufacturers of Cast, Shear, German and Blister**STEEL**

Of all descriptions. Warranted Good

FILES.

Manufacturers of Machinists' Warranted Best Cast Steel Files, expressly for working upon Iron and Steel, made very heavy for recutting.

A full Stock of Steel and Files at all times on hand. 6m4

**Cumberland, (Md.) Coals for
Steaming, etc.**ORDERS RECEIVED FOR AND FILLED
by J. COWLES, 37 Wall St., N. Y.**George O. Robertson,**

Broker in Scotch and American Pig Iron;

Bar Iron, Lead, Spelter, Tin, Copper, etc.,

NO. 4 LIBERTY PLACE, MAIDEN LANE,
(Near Broadway.)
NEW YORK**Manufacture of Patent Wire
ROPE AND CABLES,**For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tilters, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.**Samuel D. Willmott,**MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES,
NO. 8 LIBERTY STREET,
NEW YORK.**Doremus & Harris,**ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.**SCHOOL OF CHEMISTRY.****Dudley B. Fuller & Co.,**IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.**Manning & Lee,**GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal & ED
—Potomac and other good brands of Pig Iron.

**Railroad Car Manufacturer's
Furnishing Store.**

F. S. & S. A. MARTINE,

IMPORTERS AND MANUFACTURERS OF

**RAILROAD CAR &
CARRIAGE LININGS,**

PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Bunting

Walter R. Johnson,

CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

S. W. Hill,

Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Starks & Pruyn,

MANUFACTURERS OF ALL KINDS OF

STEAM BOILERS,

52 and 54 Liberty, corner of Pruyn street

Nathan Starks, Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.

For particulars see Adv. in another column.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. mak-
ers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimber & Co.,

COMMISSION MERCHANTS

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite
Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—

SAFETY AND ECONOMY.

**NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,**

Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has
constantly for sale Steam Engines, Boilers, Lathes,
Chucks, Drills, Planers, Force and Suction Pumps;
Tenoning, Morticing and Boring Machines, Shingle
Machines, Bolt and Nut Machines, Belting, Oil, Iron
and Lead Pipe; Rubber, Percha and Leather Hose,
&c., &c.

S. C. H.'s arrangements with several machine shops
are such that he can supply, at very short notice, large
quantities of machinery.
November 23, 1849.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,

Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

**Hudson River Foundry,
THOMAS & COLLINS,**

130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, Civil Engineer, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.

Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

Alfred W. Craven,

Chief Engineer Croton Aqueduct, New York.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Rail-
road, Steamboat and Stationary Engines, con-
stantly on hand and for sale by

KENNEDY & GELSTON,

5½ Pine St., New York.

October 27, 1849,

3m

IRON.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue
Iron, Spring and Bilistered Steel, Nail Rods, Best Re-
fined Bar Iron, Railroad Iron, Car Axles, Nails, Stove
Castings, Cast Iron Pipes of all sizes, Railway Chairs
of approved patterns for sale by

COLEMAN, KELTON & CAMBELL,

109 N. Water St., Philadelphia.

IRONDALE PIG METAL, MANUFACTURED

and for sale by the Bloomsburg Railroad Iron Co.

DUDLEY-FISHER, Treasurer.

75 N. Water St., Philadelphia.

Railroad Iron.

500 Tons, adfot, weighing 57 pounds per lineal
yard, for sale by

COLLINS, VOSE & CO.,

158 South St.

New York, November 17, 1849.

1m46

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.

COLLINS, VOSE & CO.,

158 South St.

New York, November 17, 1849.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.

185 " " 57½ " "

580 " " 53 " "

of the latest and most approved patterns. For sale by

BOORMAN, JOHNSTON & CO.,

119 Greenwich street.

New York, Oct. 13, 1849.

Railroad Iron.

THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.

They offer also to import and contract to deliver
ahead—on favorable terms.

DAVIS, BROOKS, & CO.,

69 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D. B. & Co.
Oct. 11, 1849.

CUT NAILS OF BEST QUALITY, BAR IRON

(including Flat Rails) manufactured and for sale

by FISHER, MORGAN & CO.,

75 N. Water St., Philadelphia.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for
sale by GEORGE GARDNER & CO.,

5 Liberty Square, Boston, Mass.

Sept. 15, 1849.

3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head;
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Merrill & Co., New
York; E. Pratt & Brainerd, Baltimore, Md.

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,

Patentes.

28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.

THOMAS B. SANDS & CO.,

22 South William street,

New York.

February 3, 1849.

Iron Store.

THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Pott-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Lo-
comotive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Bol-
ter rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,

Iron Merchants,

Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849.

1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. J. F. WINSLOW, President

Troy, N. Y.

ERASTUS CORNING, Albany.

WARREN DELANO, Jr., N. Y.

JOHN M. FORBES, Boston.

ENOCH PRATT, Baltimore, Md.

November 6, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill River,
near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.

REEVES, BUCK & CO.,

45 North Water St., Philadelphia.

March 15, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,

Warehouse 23 Courtlandt street.

New York, May 21, 1849.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also,

COAL,

of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,

275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

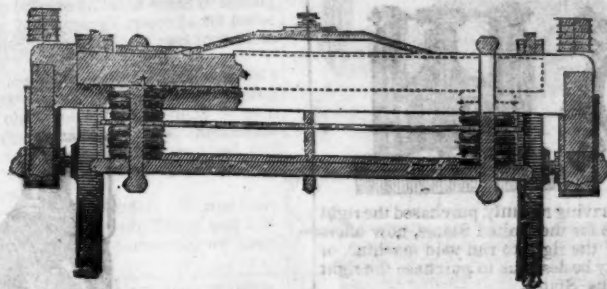
Capt. Alfred Swingle's PATENT BORING & MORTISING MACHINE.

The above Machine was invented by A. SWINGLE, of Texas, in 1846, and Letters Patent were taken out in July, 1848. As a labor saving Machine it stands unrivalled even in these days of improvements. Its uses are innumerable; it may be successfully applied to Doors, Sashes, Carriages, Wheel-Hubs, and in fact to all kinds of work where the Auger and Chisel can be brought to bear.

The only limit to the speed of the working of this machine is the heating of the tools used. It will perform at least the labor of twelve men, and in vastly better manner, and can be worked equally well by steam power or by hand. It has been used and has given universal satisfaction.

For further information apply to **H. B. TEBBETTS,** 40 Wall St., New York, to whom all orders are to be addressed.

New York, December 15, 1849.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.

RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are **G. M. KNEVITT,** 38 Broadway, N. York,

General Agent for the U. S.; and

JAS. LEE & Co., 18 India Wharf, Boston.

JOHN THORNLEY, Chestnut st., Philad.

Arch St. Machine Shop. BIRKENBINE, MARTIN & TROTTER,

Makers of

STEAM ENGINES,

and

HYDRAULIC MACHINERY,

NO. 16 ARCH STREET,

PHILADELPHIA.

Will construct Steam Engines, Pumps, for Draining Mines and Land; supplying Water to Towns, Factories, Farms, etc;

Also, Street Stops, Fire Plugs, Water Tanks, and Hydraulic Rams, with

(BIRKENBINE'S PATENT VALVES.)

B., M. & T. contract for Warming and Ventilating Buildings by Steam or Warm Water.

J. E. Mitchell,

NO. 14 OLD YORK ROAD, PHILADELPHIA.

Importer and manufacturer of

New Castle
Nova Scotia
Wickery
French Burr
Cocahoe
Cologne

Grindstones, of all sizes and grits.
Millstones, made to order, with all the recent improvements.

American and
Patent compressed
Garnick

Fire Bricks and Tiles of various sizes.
Burr Blocks, Bolding Cloths, Mill Irons, etc.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

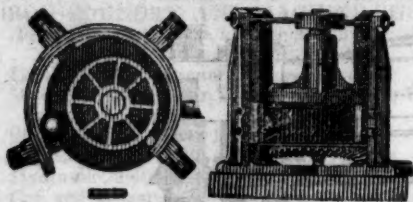
Albany, August 18, 1849.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

MACHINERY.

Henry Burden's Patent Re-
volving Shingling Machine.

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought
Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

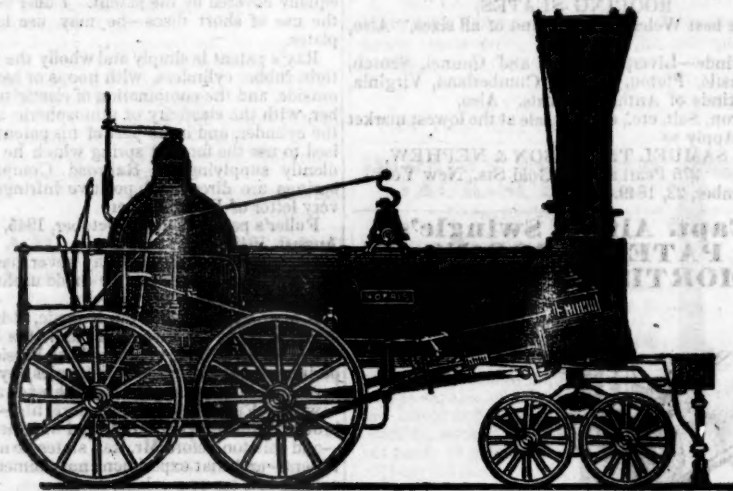
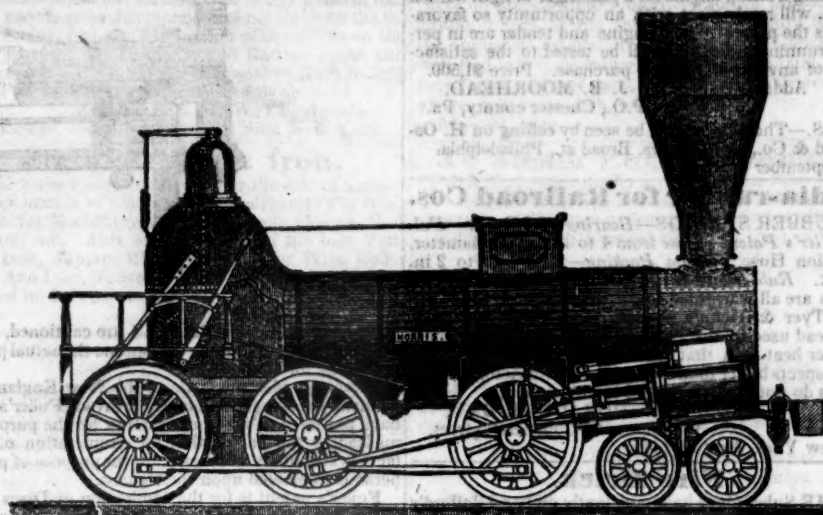
A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co.,
March 12, 1848.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA.

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Text Book of Mechanical
Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

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5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.

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CENTRAL RAILROAD—FROM SAVANNAH
to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight.

Rate of Passage	\$8 00. Freight
On weight goods generally,	50 cts. per hundred
On measurement goods	13 cts. per cubic ft.
On brls. wet (except molasses and oil)	1 50 per barrel.
On brls. dry (except lime)	80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts. per hundred
On hhds. and pipes of liquor, not over 120 gallons	\$5 00 per hhd.
On molasses and oil	\$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,
Gen'l Sup't Transportation.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore.
STOCKTON & FALLS.
October, 1849.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at	7 am.
" " "	3 pm.
Leaving Montreal at	10 am.
" " "	6 pm.

THOMAS STEERS, Secretary,
May 31, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WEIGHTMAN**, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

Engine and Car Works,
PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

C. W. Bentley & Co.,
IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,
BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SHUYLKILL 2d AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. ly25

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thickneses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse.

JOHN GREACHEN, JR.,
98 Broadway, opposite Trinity Church.
New York, October, 1849.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

Eastern Railroad.	Boston & Maine Railroad.
Providence Railroad.	Providence and Wor. Road.
Western Railroad.	Concord Railroad.
Old Colony Railroad.	Fitchburg Railroad.
Schenectady Railroad.	Syracuse and Utica Road.
Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
Central (Ga.) Railroad.	Macon and Western Road.
	New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

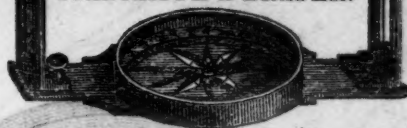
E. & F. FAIRBANKS & CO.
St. Johnsbury, Vt.

Agents, } FAIRBANKS & Co., 81 Water St., N. York.
 } A. B. NORRIS, 196 Market St. Philadelphia.
April 22, 1849. ly*17

Coal.

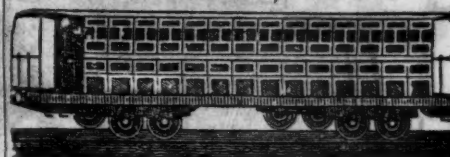
CUMBERLAND SEMI-BITUMINOUS COAL
superior quality for Locomotives, for sale by
H. B. TEBBETTS,
No. 40 Wall St., New York.
May 12, 1849. 1ml19

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INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut,
near Third, Philadelphia.

CAR MANUFACTORY
CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848. 444

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J. or 74 Broadway, New York.

Plumbago, or Black Lead,
BLACK LEAD IN ITS CRUDE STATE, AND

Black Lead Paints, prepared for various purposes. This paint is peculiarly adapted for the covering of all kinds of iron railing, or iron work wherever exposed; such as railroad bars, anchors, bolts for vessels, etc.—It makes the most durable paint to protect woodwork from moisture, and the indestructible nature of the body of it peculiarly fits it for covering the inside of depots, roofs of buildings, and all wood work exposed to fire.

The mine from which this article is taken is near Raleigh N. C. It has been examined by many of the most scientific men in this country, who all concur in pronouncing it of the best quality. In the fourth vol. of the American Journal of science, Professor Silliman speaks of it in the following manner. "The Plumbago from North Carolina is of a very fine quality and appears well adapted for pot & crayons." Professor Dewy speaks of it "as the finest he ever saw." Professor Oimstead, now of Yale College in his geological report of the State of North Carolina, Page 5 says.—"Not long since I received a letter from a gentleman in Vermont who contemplated setting up the manufacture of Black Lead Pots or Crucibles, requesting some particulars respecting this Plumbago, having been informed on the highest authority, that it was the best that could be procured within the United States."

It is a very fine article and superior for Pencils also for Crucibles, Pots etc., when the composition of silicious minerals is properly made to suit it, and may be had in any reasonable quantities of the subscriber on liberal terms at Raleigh North Carolina or at James H. dene 55 West St. New York.
Sep., 7th 1849. Richard Smith,

FOWLER M. RAY'S METALLIC INDIA RUBBER CAR SPRINGS.

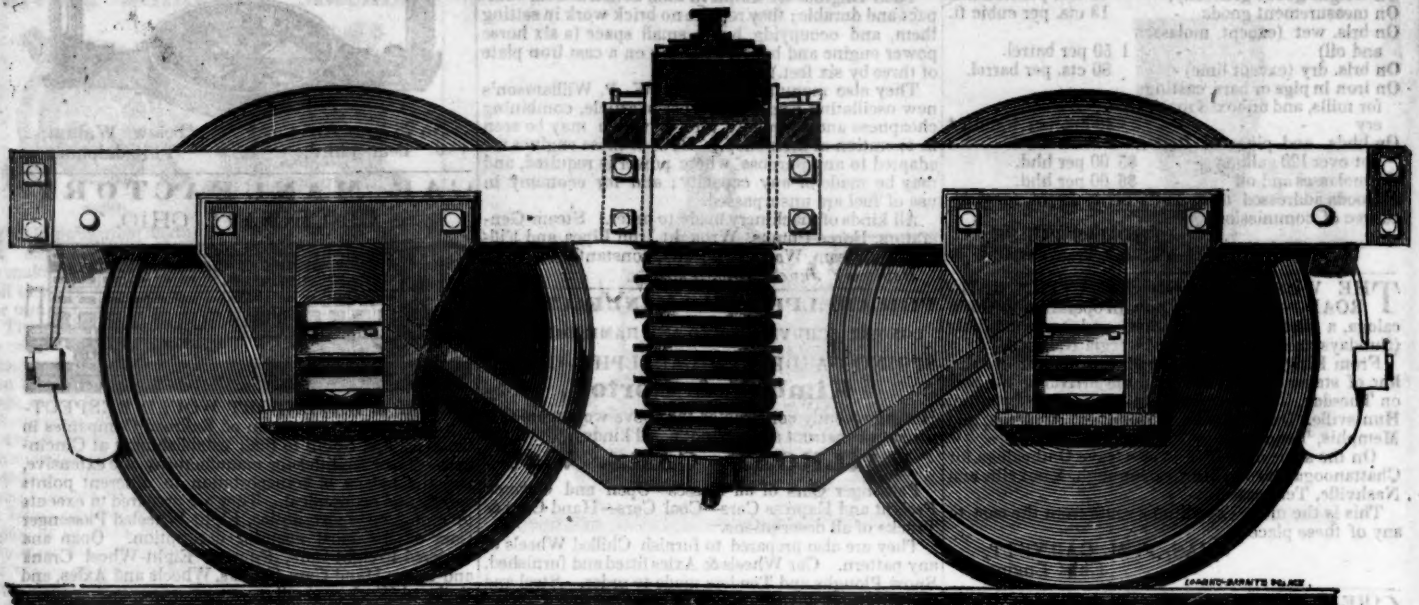


Fig. 1.

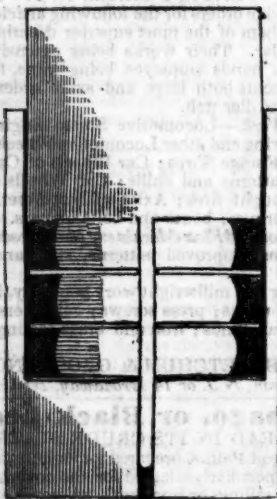


Fig. 2.

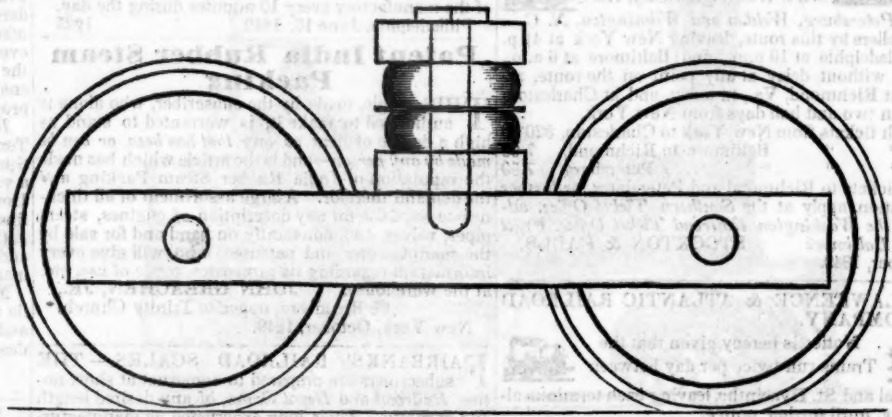


Fig. 3.

So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Railroad Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1, Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannister testify as being the model marked "B."

Cut No. 2, Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3, Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.

AMERICAN RAILROAD JOURNAL.
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136 NASSAU STREET,